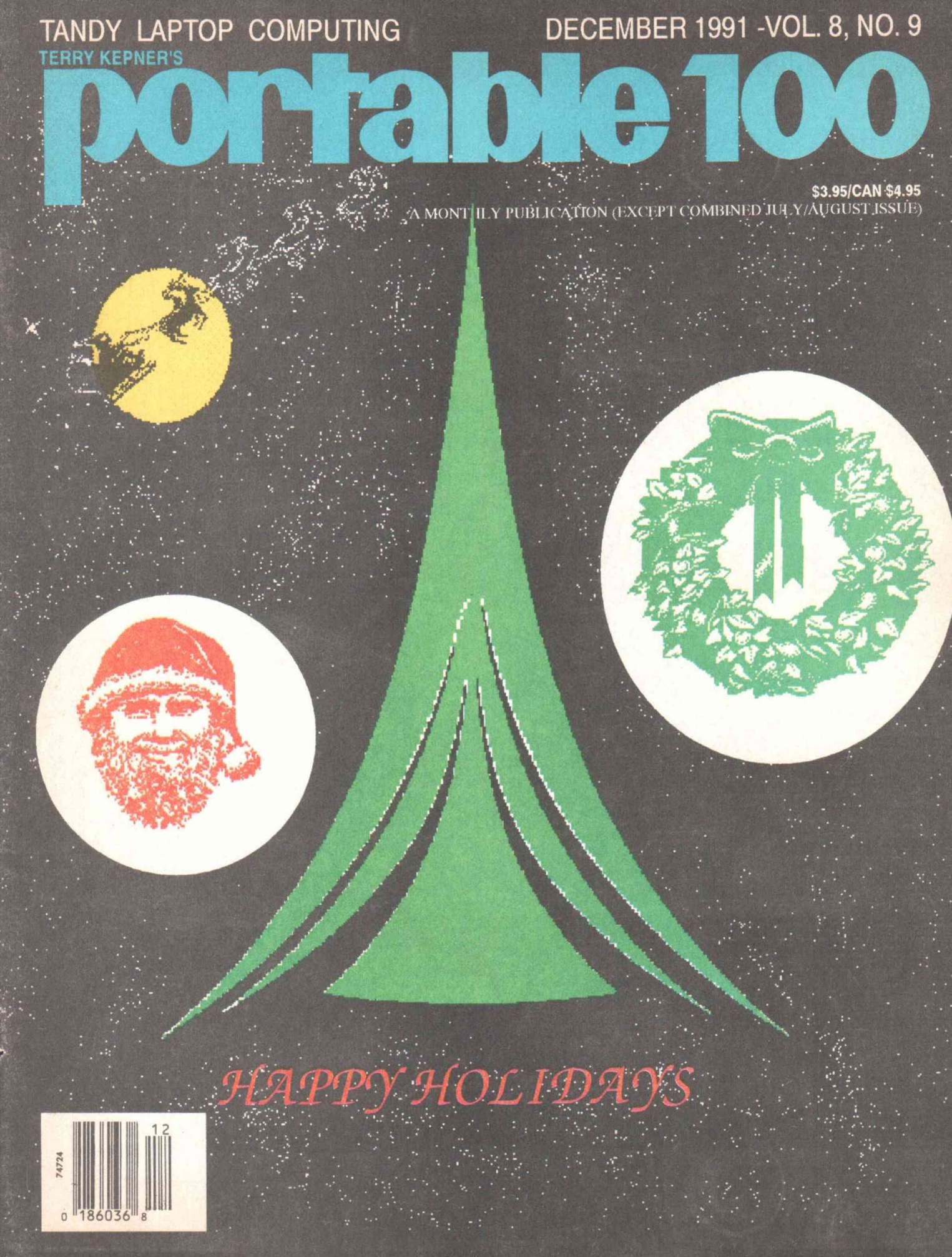
TANDY LAPTOP COMPUTING DECEMBER 1991 -VOL. 8, NO. 9

TERRY KEPNER'S

# portable 100

$3.95/CAN $4.95

A MONTHLY PUBLICATION (EXCEPT COMBINED JULY/AUGUST ISSUE)



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# Text processing power that no other program can equal.

NOW AVAILABLE ON M-200!

# WriteROM©

on Snap-in Cartridge $99.95

(please add $5.00 shipping and handling charge to your order)

## TMNE says "Send it back in 30 days for a full refund if you don't agree."

WRITE ROM is the definitive word processing extension for the Model 100. PCSG produced the first text formatter for the Model 100, now sold by Radio Shack as Scripsit 100. Now, 18 months later, PSCG introduced WRITE ROM. Those who have experienced it say WRITE ROM literally doubles the power of the Model 100.

WRITE ROM — as its name implies — is on a snap-in ROM. You simply open the little compartment on the back of the Model 100 with a quarter and press WRITE ROM in. It's as easy as an Atari game cartridge. You can use other ROM programs like Lucid whenever you wish.

WRITE ROM lets you do every formatting function you'd expect, like setting margins, centering, right justifying and creating headers and footers. But it does them under function key control.

WRITE ROM remembers your favorite format settings so you can print a document without any setup, but you can change any formatting or printing parameter instantly with a function key.

WRITE ROM's "pixel mapping" feature shows you an instant picture on the screen of how your printout will look on paper.

In all there are 64 separate features and functions you can do with WRITE ROM, and some of these features are truly breakthroughs for the Model 100.

First, WRITE ROM lets you do search and replace. Any word or phrase in a document can be searched for and replaced with any other phrase where the search words appear.

Second, WRITE ROM lets you send any text (formatted or not) to any other computer over the phone with just a function key. What's more, it dials and handles sign-on and sign-off protocol automatically.

Third, WRITE ROM has a wonderful feature called Library that lets you record favorite phrases, words or commonly used expressions (often called boilerplate).

Any place you wish Library text to appear you just type a code. WRITE ROM automatically inserts the text just like a Xerox Memory Writer. Picture what you can do with that kind of capability.

WRITE ROM is blindingly fast. No one can claim faster operation. Because it is on ROM it uses virtually none of your precious RAM. It works with any printer, serial or parallel. You can make a duplicate copy of a document file under a new filename. Rename or delete (kill) any RAM file with function key ease.

This description only scratches the surface of this amazingly powerful piece of software. Dot commands allow control of such things as margins, centering, line spacing and other changes in the middle of a document. Most are WordStar™ compatible.

A mailmerge feature allows you to send the same document to every name on your mailing list, personalized for each recipient.

WRITE ROM enables you to do underlining, boldface and correspondence mode as well as any other font feature like superscripts that your printer supports, in a way that many users say "is worth the price of the program."

To underline you don't have to remember a complicated printer code. You just type CODE u, and to stop underline, CODE u again. The CODE key is to the right of your spacebar. Boldface? CODE b to start and stop. Easy to remember and do. Five different printer features of your choice.

We couldn't list all the features here. For example, you can select not just double space but triple or any other. You can use your TAB key in a document. WRITE ROM allows you to undent. This means you can have paragraphs with a first line projecting to the left of the rest of the paragraph. WRITE ROM has a feature unique for any word processor on any computer. It's called FORM. FORM is an interactive mechanism that lets you create screen prompts so that you or someone else can answer them to fill out forms or questionnaires.

With FORM, any place that you had previously typed a GRAPH T and a prompt in a document, WRITE ROM will stop and show you that prompt on the screen. You can type in directly on the screen and when you press F8 you see the next prompt. It goes to a printer or a RAM file.

Think how you can use FORM. A doctor or nurse could use it for a patient's history with each question appearing on the screen. An insurance salesman could use it for his entire questionnaire. You could construct a series of prompts to answer correspondence, typing the answers, even using Library codes. This feature lets you answer letters in rapid-fire fashion, each with personalized or standard responses.

Before WRITE ROM you had to be a programmer to create a series of prompts. Now it's as simple as GRAPH T.

PSCG makes the claim that WRITE ROM is the easiest, fastest and most feature-rich formatter for the Model 100. We're happy to offer WRITE ROM because it expands the 100 to a dimension of text processing you cannot equal on even larger computers.

We brashly state that WRITE ROM is the best you can buy. But put that to the test. If you aren't as excited as we are, return it for a full refund. Priced at $99.95 on snap-in ROM. Mastercard, Visa, American Express and COD. Please add $5.00 shipping and handling charge.

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# More Than Just a Laptop User Group

Club 100 — Pleasant Hill, California — Tandy Laptop User Group

## Lapdos II

*Turn your Model 100/102/200/NEC8201 into a PC-partner. Connect your laptop computer or Tandy Portable Disk Drive directly to MS-DOS computers for file transfers at 19200 baud. Fast! Easy to use. Single or batch file transfers at the press of a button. Feature rich! (Computer <—> Link Cable required)*

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*Turn your WP2 into a PC-partner. The only "file transfer" and "file conversion" software available or WP2 to DOS computer owners. Online utilities convert WP2 .DO files to popular DOS word processing file formats ... maintains file formatting codes. Super easy and fast. (Computer<—>Link Cable required)*

## Computer Link <—> Cables

*Custom-built cables specifically developed for use with Lapdos II and WP2DOS. More than a simple "null-modem" cable.*

## 100duet


*Turn your Model 100/102 into a Mac-partner. Connect your laptop computer or Tandy Portable Disk Drive directly to Macintosh computer for file transfers at 19200 baud. Fast! Easy to use. Single or batch file transfers at the press of a button. Automatic file translations allow your Mac programs to use your laptop files, directly!*

## Loader

*Add-on connection program enables Model 200 and NEC8201 owners to use 100duet.*

## WP2duet

*Turn your WP2 into a Mac-partner. Connect your laptop computer or Tandy Portable Disk Drive directly to Macintosh computers for file transfers at 19200 baud. Fast! Easy to use. Single or batch file transfers at the press of a button. Automatic file translations allow your Mac programs to use your laptop files, directly! Maintains file formatting codes.*

## The Ultimate ROM II


*Four programs in one make this more than just a "super" ROM.* ***T-WORD:*** *overwrite/insert mode while editing, imbed print controls, control print output (margins, line spacing, page feeds, headers, footers, auto page numbering, bold face, underline, italics, mail merge, labels, and more), pixel-plot view of document before printing.* ***T-BASE:*** *true relational base operations, key field sorts, math, report generation, etc.* ***IDEA!:*** *outliner program for concept development.* ***VIEW 80:*** *see up to 60 characters per line while in TEXT, TELCOM and BASIC, fast processing, easy to read.* ***TS-DOS LINK:*** *automatically loads and runs TS-DOS from disk without conflicts (TS-DOS on disk, sold separately).*

## TS-DOS on Disk

*Super fast, easy access to your TPDD or TPDD2. Available for Models 100/102/200 and NEC8201. Features: file tagging, file printing direct from disk or RAM, direct access to disk drive from within BASIC or TEXT. Use by itself or with the Ultimate ROM II or other ROMs*

## TS-DOS on ROM

*When all you need is disk access without using RAM. Super fast, easy access to your TPDD or TPDD2. Available for Models 100/102/200 and NEC8201. Features: file tagging, file printing direct from disk or RAM, direct access to disk drive from within BASIC or TEXT. ROM version includes file compression in RAM. Program runs from ROM - uses no RAM!*

## ROM2/Cleuseau


*The very best programming tools available for Model 100/102/200 and NEC8201 laptop programmers. Two ROMs in one, and more. ROM2 is a full functioned 8085 macro assembler. Cleuseau adds much needed features to BASIC and TEXT. Call for full details.*

## Power Pillow

*Good-looking, powerful, long-lasting battery pack encased within an attractive black-vinyl holder provides hundreds of hours of battery life. Attaches to the back/bottom of your laptop with velcro (included). Hand crafted and tested. (Requires 4, "D" cell batteries, not included).*

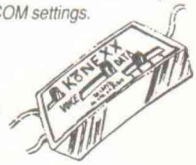
## Keyboard Bands

*Just the right size dental rubber bands necessary to almost eliminate Model 100/102/200 keyboard noise. Great for library and meeting use. Easy to install. Instructions included.*

## Quick Reference Card

*Don't leave home without this handy three-fold card, containing all the functions for Model 100/102 use. Includes a listing of BASIC, TEXT commands and TELCOM settings.*

## KONEXX




*The hottest, new line-attachment for going online though office PBX and hotel phones. Does not require a dedicated line. Active electronics provide much more than simple switching. Attaches, in-line, between the phone handset and the base. Includes clips for hard-wired base-to-handset found in most hotels. Small size - fits in pocket.*

## RAM Expansion

*Expand your Model 100/102/200/WP2 computer's RAM. RAM chips, RAM expansion modules and WP2 RAM disks available. (M100: 8K RAM chips, 64K and 96K RAM Exp Banks) - (M102: 8K RAM, 128K and 256K RAM Exp Banks) -(M200: 24K RAM banks) - (WP2: 128K RAM disk)*

## Free BBS


*Our free-2-use bulletin board computer is available 24 hours a day. Features: free public conference, free classified advertising, free laptop reference material, free newsletter, free downloads, product ordering, assistance, and more. Log on with any computer. Simple menus fit all 40 character, 8 line displays. Fast, interrupt drive, easy to use for beginners. Friendly. No online cost. Unlimited online time. PC Pursuitable! Optional online library access $1 a month.*

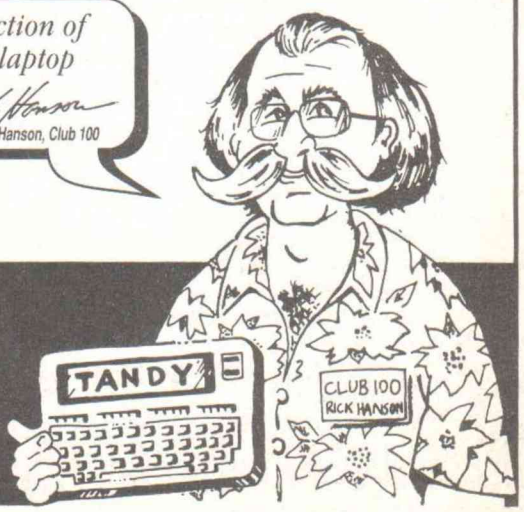
## Program Collections

*We have the largest "quality" collection of public domain, shareware and author-specific programs available for Model 100/102/200 users, i.e., text, print, telcom, business, graphics, drives, utilities, games, music, programming, education. Available online or mail order on disk. Listings available.*

*"Look to Club 100 for the largest selection of performance products to make you a laptop power user. Call today!"*

Rick Hanson

Rick Hanson, Club 100

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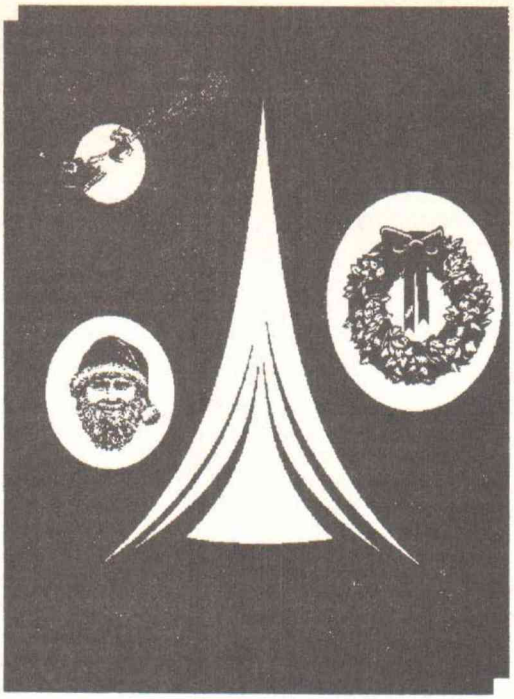
**Circle 160 on reader service card.**

VOL. 8, NO. 9
December 1991

ON THE COVER:
*Season's greetings to all our readers from the staff at* Portable 100*!*
*Artwork by Bob Liddil*





## DEPARTMENTS

# ROM WITH A VIEW

Back in blue jeans again! After playing publisher since January I'm passing the "suit" back to Terry Kepner. We've made great progress, having taken a critically ill *Portable 100* from emergency room to intensive care to recovery ward. The patient's gained much weight and has a strong, healthy pulse now. The operation was a definite success. (Just wait 'til they get my bill!)

There have been some side effects. Besides a heavy personal toll, I've had to neglect many Tri-Mike Network East projects, and I'm eager to get 'em going. I've missed writing, hacking, and generally tech-ing around. And I've really missed sleeping, something I intend to resume the instant this editorial reaches a high enough total word count.

Toward that end, here's some of what's happening in the P100 world ...

First, Michael Daigle's current project kept him too busy to do an IDEA BOX column this month. So we've decided to rerun his very first one, originally published in the May 1988 issue. It's one of my favorites, and I hope you'll enjoy it as much.

Tony Anderson can no longer write the MOVING UP column, due to other commitments. We're going to miss his input, but MOVING UP will continue, courtesy of Stan "Skateboard" Wong, who filled in without missing a beat. (In gratitude I'm sending him my entire Linda Ronstadt album collection!)

We're losing another valuable contributor. Next month's DESKMATE column will be George Sherman's last. He'll be traveling around the country doing some well deserved retirement "goofing off." He says there's a lot of country he wants to see. He also says he'd much rather look at his wife than his computer—who could blame him? (George, we hope you'll see everything you want, and if you're ever in Peterborough, please stop in and see *us*!)

Next month Paul Globman resumes his CUSTOM 200 column. Look for more of the same wizardry that produced his XOS software, RAMDSK.CO for the Node Datapac, games, tips and tricks.

Blast From The Past: We plan to re-run some of the best articles from past issues. If you're unaware of the goldmine of great stuff in back issues, such a column will be a great introduction. With luck, we'll launch it next month.

Good Deal: Thinking of getting an MS-DOS laptop? Now may be the time. Tandy's 1500 HD, the best DOS laptop I've ever used, originally sold for $1999. The latest Radio Shack flyer has them for only $1099. Check this li'l beastie out!

Sentimental Department: With every December issue, I naturally think of Christmas. Of home and family and loved ones. While most of you are lucky enough to be with your "special people" every day, some of us, myself included, are not. We may be more acutely aware of how much we miss them, and of how easily, albeit unintentionally, people can take their daily contact for granted.

Each year, my Christmas gift to all of you is a reminder. As I said in my very first December editorial: If there's someone special nearby, why not put this magazine down for a moment. Go and give them a great big hug and tell them just how special they are. We'll be here when you get back.

To my most special person in the whole world: You're the best daughter a dad could ever have. I miss you, Shannon. And I love you.

(I also love my new 501's! Now I'm off to take a long winter's nap.)

Merry Christmas! See you next month!

*Nuget*

# Toolbox

Manuscripts were typed into Microsoft Word 4.0 on a Tandy 1500 HD, where they were edited, spell-checked, and had basic format instructions inserted. From there they were loaded into a Tandy 4000 (80386 CPU, Tandy EGA Monitor, Tandy LP-1000 LaserPrinter) desktop computer and placed into Aldus' IBM PageMaker 3.01 Once there, design decisions on photo, figure, and listing sizes and placements were made. Here, pull quotes are placed, headlines, intros, and bylines are sized and positioned, and advertisements positioned.

Normally, the Tandy LP-1000 is capable of emulating only a Hewlett Packard Laser Printer Plus, but with the addition of the Destiny Technology Corporation (300 Montague Expressway, Suite 150, Milpitas, CA 95035. (408) 262-9400) PageStyler 4.5MB kit, the LP-1000 is turned into a fully-compatible PostScript printer, with all 35 native fonts that are found in the Apple LaserWriter Plus printer. The Destiny PageStyler is available through the Tandy Express Order Hardware system.

Page previews were output from the Laserprinter. When everyone was satisfied with the appearance, final pages were output and artwork and line art ads were positioned. The finished magazine was then delivered to the printer, who printed it, labeled it, and mailed it to you.


TERRY KEPNER'S **portable 100**

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POSTMASTER: Send address changes to: Portable 100, Portable Computing International Corporation, 145 Grove Street Ext., PO Box 428, Peterborough, NH 03458-0428.

# FROM THE BOONDOCKS

I'm heavily into the Model 100 now. I bought mine used from a lawyer a few years ago, upgraded it to a 32K memory and over the years have gone more and more to using it. I plan to add a 256K Datapac to increase the memory; otherwise I'm pleased with it. For the last six months I have been using the Model 100 exclusively.

I also have a Panasonic Executive Partner with 640K memory and a Panasonic KX-P1695 fifteen-inch printer. But I don't use them much anymore because the Model 100 does everything I need to do and is so easy to use.

I live full time in a motorhome and am generally out in the boondocks somewhere. I have a 650-watt generator that I turn on when I need 120-volt power, but the Model 100 and the Portable Disk Drive II can be battery operated or operate off my motorhome's twelve-volt batteries and, consequently, they get all the use.

I went to Radio Shack and bought a ten-foot twelve-volt extension cord, which is plugged into the cigarette lighter on the dash and snakes under it to my desk. At the other end is a "Y" adapter. One end of the "Y" has a Statpower Model III 100W inverter with a Dataguard 6-outlet surge protector. Into that I have plugged the transformers for the Model 100, PDD2, and Canon BJ-10e Bubble Jet printer. The entire system is twelve-volt powered and I can use it in the middle of the night without having to turn on a generator and wake people in the RV next to me.

This whole letter was written, saved, and printed on the system without a bit of 120-volt power!

I use the TMNE *Super ROM* exclusively. I have a spreadsheet that tracks my cash flow to the penny on a daily basis, I keep a daily diary that will run to 25K every ten days or so, I have dozens of different files for keeping track of things to do, groceries to buy, books to read, plans for the future, et cetera.

I get comments from every clerk in every store I go to because I carry the M100 with me. At the local used-paperback bookstore I am known as "the guy with the computer." A grocery clerk once accused me of checking up on her pricing. I wasn't, but the next time I ran up a little spreadsheet and did, just for the hell of it. I was only 21 cents off after nearly $70 worth of buying because I had misread the price of an item.

Is there any way to dump the *ADDRSS, TELCOM,* and *SCHEDL*? I never use them and would like to have the memory they take up.

A month or so ago, I had a problem with my PDD-2 and decided that grit or something had gotten inside and was scratching disks and making them unusable, so I bought a second drive. When I have the dirty one cleaned, I would like to have a two-drive system. I recall having seen an advertisement for a software/hardware combination that linked two PDD-2's together. Can you help me?

As for the magazine, I notice that there are quite a few ads for MS-DOS products. I realize that you have to have advertising income, but couldn't you seek more from third-parties that deal with the Model 100 and start another magazine for MS-DOS? After all, the name of the magazine is *Portable 100*, not IBM-something. It would be a shame to lose this source of ideas and information for the Model 100.

**B.J.**
**Reno, NV**

*Is there any way to dump* ADDRSS?

*Isn't it amazing that after almost nine years that no computer has yet reached the same level of usability as the Model 100? Your setup sounds quite efficient, and you sound very considerate of your neighbors. I wish my neighbors thought about their noise before they started working late at night.*

ADDRSS, TELCOM, *and* SCHEDL *do not take up any of your RAM, although they do take up three slots in your menu. You can blank them out by typing* POKE 63864, 184 *(TELCOM),* POKE 63875, 184 *(ADDRSS),* POKE 63886,184 *(SCHEDL). This will NOT give you more room in the menu; it will only make them invisible to the menu. The three slots will still be occupied. Deleting the entries entirely will cause problems later. To restore the three to visibility, repeat the pokes, only use* 176 *instead of* 184.

*I think you will discover that the malfunctioning drive cannot be repaired. We had the same problem a couple of years ago and investigating it revealed that the ceramic drive-head had developed a hairline crack. One side of the crack projected a tiny fraction of an inch farther out than the other, carving the ferromagnetic material off the disk surface like a woodlathe carving a table leg.*

*If you want to interconnect two drives, contact Tony Anderson, POB 60925, Reno, NV 89506 for the dual-drive hookup. Sorry, but we do not have a phone number to give you.*

*The problem with seeking only Model 100 advertisers is that there are simply not enough of them to support a magazine. If you eliminate the MS-DOS advertisers from* Portable 100, *there isn't enough money left to pay for the print bill, not to mention covering the postage, salaries, rent, telephone, and all the other costs involved in putting out a magazine. No MS-DOS, no magazine. It's that simple.*

*We have no intention of becoming just another "me too" IBM compatible magazine. The very thought of us trying to take on* PC World *or* PC Magazine *is ludicrous. We have neither the subscription base nor the personnel to take such a course.*

*We will continue to support the Model 100/102 market, providing the articles that our readers want; to make their computers more useful to their lives. The MS-DOS computers we will cover will remain Tandy specific, providing Tandy owners with the information they cannot get from* PC World *or* PC Magazine *(who seem to think that the only portable computers made are by Compaq and Toshiba). Things like how to upgrade to* MS-DOS 3.3 *without losing your Tandy 1400's built-in RAM drive, how to install a hard drive in a 1400 without losing the ability to format floppies in the floppy drive, how to use "hard disk required" software on a single-drive 1100FD, and so forth.*

*-tk*

### THE LONG AND SHORT OF IT

I was looking over the schematic of the Uninterruptible Power Supply in the June issue on page sixteen. It all makes sense to me except for the battery sym-

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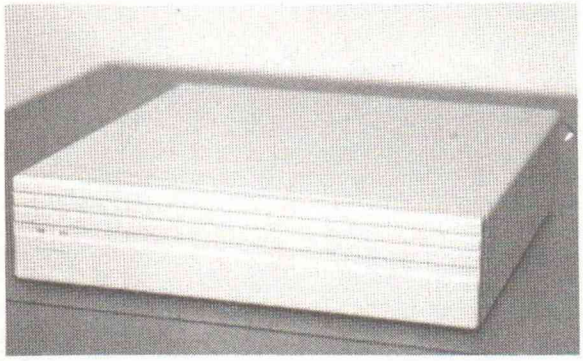
# THE ULTIMATE IN TRANSPORTABLE DATA STORAGE DEVICES!



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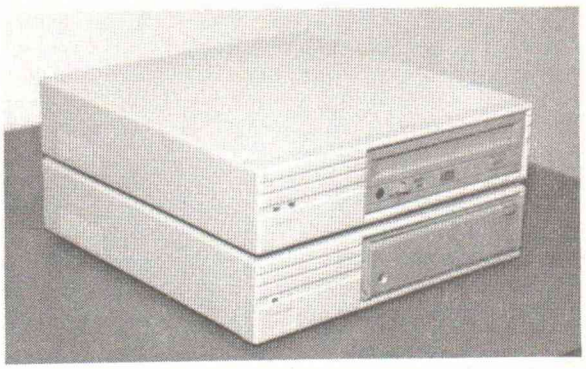
WELTEC Digital Inc proudly presents **Welport**, the parallel port host adapter for IBM compatibles, laptops and notebook computers. Only 8 simple steps will turn your computer into a storage powerhouse. It's no more complicated than hooking up a printer!

The **Welport** allows concurrent use of printer and SCSI device with fast, reliable performance for each. And you can transport your device anywhere and plug it into just about any DOS compatible CPU for instant access to your data!





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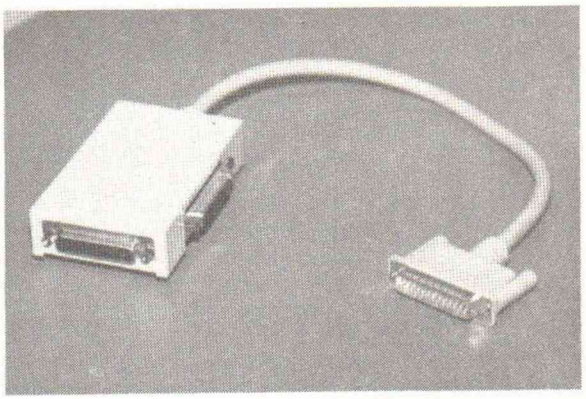

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IBM, MS-DOS version works over the phone!

# *Disk+*

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NOW AVAILABLE ON M-200

## Try *Disk+* for 30 days. If you aren't as excited as we are, return it for a full refund.

When we designed *Disk+* we did it out of necessity. We wanted a way that we could just connect a Model 100 to our desktop computer with a cable and save files onto the desktop's disk drive. We wanted it to be so simple to use it would be self-explanatory.

Picture this. *Disk+* comes to you on a Snap-in ROM and a diskette for your desktop. You take a quarter and open the little compartment on the back of your Model 100. Then you just press the ROM into the socket. *Disk+* appears on your main menu just like a built-in.

You connect your Model 100 to your other computer using an RS232 cable (available from TMNE for only $20).

You just place the *Disk+* diskette into the desktop's drive and turn on the computer. It powers up automatically and says "awaiting command" on your desktop's screen. Then you just put the widebar cursor on the Model 100 main menu on *Disk+* and press ENTER. You are shown your RAM files arranged just like the main menu.

To save a file to your other system's disk drive, you just move the widebar cursor to the file you want to save and press ENTER. It is saved instantly with no further action.

To look at the disk directory, you just press a function key on your Model 100. You see immediately the disk directory on your Model 100 screen, and it is arranged just like your Model 100's main menu.

To load a file from the diskette to your Model 100, you just move the widebar cursor to the file and press ENTER. The file is transferred to your Model 100's RAM instantly. You can press F8 and go back to the main menu, and the file you loaded from diskette is there, ready to use.

It is so nice to be able to keep your documents, programs (both BASIC and machine code) and *Lucid* spreadsheet files on the diskette, and bring them back when you need them. All files are ready to run or use with no changes or protocol by you.

**If you have access to a desktop computer and don't have *Disk+*, then evidently we have done a poor job telling you about it.**

All files and programs that you load or save, go over and come back exactly as they are supposed to be because of full error checking. This guaranteed integrity is really a comfort. *Disk+* is wonderful in so many other ways. For example, you can do a "save all" of all your RAM files with just a touch of a function key. That group of files is saved on the diskette under a single filename with a .SD (for subdirectory) extension. Any time you want, you can bring back all those files at once, or just one or two if you like, again with one-button ease.

*Disk+* takes up no RAM. That's zero bytes either for storing the program or for operating overhead.

What really excites most *Disk+* users is text file cross compatibility. Your Model 100's text files are usable on your desktop computer, and your desktop's text files become Model 100 text files.

This means you can write something on your Model 100, and with *Disk+* transfer it instantly to your desktop and start using it right away on your bigger computer. Or the way we like to work is to type in a document on the desktop computer and then transfer it to our Model 100 with *Disk+*. Then we print out the document, beautifully formatted, using WRITE ROM.

*Disk+* works with just about every micro sold, from IBM PC and its clones, to all Radio Shack computers (yes, all), to Apple II, Kaypro, Epson and most CPM. Just ask us. More than likely, your computer is supported.

Incidentally, hundreds of Model 100 owners have gone to their Radio Shack stores and bought a color computer because it is so low priced, and with *Disk+* they have an inexpensive disk drive.

And if that weren't enough, how about this: *Disk+* also provides cross-compatibility between different computers like IBM, Apple or the Model 4 using the Model 100 as the intermediary device. Quite a feature!

The snap-in ROM is really great because you can use other ROMs like *Lucid* or WRITE ROM. They snap in and out as easily as an Atari game cartridge and you never lose your files in RAM.

Anyone who ever uses *Disk+* simply can't do without it. But so many times we have had new users call us and say, "Wow! I had no idea when I ordered it that *Disk+* would be so fantastic. I just couldn't believe that I could use my desktop computer's disk drive with my Model 100 just like it is another main menu."

That's why we sell *Disk+* on a thirty-day trial. If you aren't completely satisfied, return it within thirty days for a full refund. Priced at $149.95 on Snap-in ROM. MasterCard, Visa or COD.

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bol. The battery appears to be upside down. If my memory serves me right, the "+" of the battery is on the long bar with the "-" on the short bar. If I'm right, that fuse (F1) will come in real handy! Actually, I hope I'm wrong because Mr. Ryan did a great job and it would be a shame to find any imperfections.

**Rick Sparber**
**BBS**

*You don't need to worry, Ryan's right, the short bar is the "+"sign.*

*-MN*

### WP-2 SUGGESTIONS

I read *Portable 100* solely for articles about the WP-2. However, the articles are extremely elementary—for example the article on WP-2 page layout in the latest issue. This article said nothing at all that I didn't get from the Tandy manual the first day I had the machine.

I corresponded with Stan Wong on CompuServe about what I thought should be in his articles. I suggested, for example, details on controling the best printer for the WP-2, the Canon BJ-10e (another good choice is the Diconix 150), using printer setup strings and control characters accessed through *CTRL-V*.

His response was that Mike Nugent had asked him to aim low in terms of audience. Please say it isn't so. Why would anybody pay for a magazine with just one article per month on the desired subject if that article will say nothing that isn't in the manual?

I find it incomprehensible that *Portable 100* readers are unsophisticated. Certainly, you don't treat your users of Model 102's and DOS machines this way! If you imagine, nevertheless, that you have lots of unsophisticated WP-2 users among your readers, how about recognizing that there are some more of us who really use this machine and need more advanced help? Otherwise your notion that only unsophisticated WP-2 users read *Portable 100* will be a self-fulfilling prophecy.

**Peter Schroth**
**BBS**

*Well, Peter, when we first started the column on the WP-2, we weren't too sure just what our audience would be like. Now that we're starting to get feedback on the column, we can adjust our goals. Hopefully, in the near future, you'll begin to see some more sophisticated articles on the WP-2.*

*-tk*

### ATLANTA PORTABLE COMPUTER ASSOCIATION

We are a portable computer users group. We tend to stay within the Model T and Tandy MS-DOS portable community, but we accept any type of portable (including luggable, laptop, notebook, palmtop, and pocket). Our president is Clyde Price, and we meet the last Saturday of each month at the Cascade Branch Library; take I-285 west-bound, take exit 5 west (south of I-20, the Cascade Rd. exit), and then take the first road on the right to the brick building with the green trim. Meetings start at 10am and last to about 1pm. For more information, please call Charles Stephens at (404)425-7599.

I have heard rumors of there being a Model 100 Fido Echo. If so, maybe you could echo it to the board. If not, we could talk to the local net coordinators and see if we could set one up.

**Charles Stephens**
**Atlanta, GA**

*Sorry, Charles, but our BBS is not a Fido Net board and can't hook up that way.*

*-tk*

### GUIDO STRIKES AGAIN

Dear Son, thank you for your nice letter (Fig. 3, SUPER HERO, Oct. '91). The other day a fellow named Guido knocked at my door. I would not let him inside after viewing his rough condition through the peephole in the door. (The fact that I could only see midway up his chest through the peephole was a contributing factor.)

I spoke with him a bit, but left the door securely chained. He seemed satisfied when I explained to him that your father and I had deposited $30,000 into an account payable to you on Poppa's and Mamma's death. We were told by the bank that by the time you are 62 years old, the added interest will bring the balance to the required $40,000.

Guido thanked us for our prompt cooperation and moved on to his next victim ... er, assignment. I want you to know that I am breathing a lot easier, now.

**Your Mother**
**Location Unknown**

*Gee, thanks, Ma!*

*-MN*

### BACK AGAIN, AND *TELCOM* WOES

I got your Puppy Dog issue. Thanks! It didn't take much to get me to renew. I'm glad you guys are hanging in there; just hope you don't convert over to the MS-DOS laptops exclusively. My budget only supports a "paid-for" Tandy 200, although I'm planning to get a Node Rampack.

When I get the Rampack and finish dumping all my files (not that many) from my Model 4P's hard disk to the Rampack using PCSG's *Disk+*, I'd like to trade in the *Disk+* ROM to TMNE for a *Super ROM*. Is this a problem?

When I was living in New Hampshire, I logged on to your BBS a couple of times. I've been trying to again, but no matter if I use *F1* to find "P100-BBS" and then *F2* to call, or just *F2* and then manually key in *16039249770<>*, or even dial your number and then try to hit *F4* to log in_... nothing seems to work. All I get is a beep and it goes back to *TELCOM* with the cursor blinking. What am I doing wrong? I admit I'm out of practice with *TELCOM*, but I can't figure this out.

**David McGee**
**Richmond, VA**

*First, welcome back! Second, you might want to keep that* Disk+ *and 4P arrangement for archive storage of your files. You don't have to leave the* Disk+ *chip in place all the time, you could just pull it out and pop in the* Super ROM *chip. Then, when your Rampack fills up (and believe me, it will), you can replace the* Super ROM *with* Disk+ *and port your files to the 4P disk drive.*

*The* Telcom *problem sounds like you have the wrong ends plugged in; that is, the handset lead is plugged to the wall and the wall lead is going to your telephone. That would give you the symptoms you describe.*

*-tk*

# Confessions of a Hardware Junkie

*by Michael Daigle*

*Editor's note: Since Mike is taking this month off, we decided to rerun one of his best in this space. Enjoy.*

Hi there. Welcome to "The Idea Box," a new column here in *Portable 100* magazine. My name is Michael Daigle, and we're going to go on some interesting journeys together.

I'll start this by giving you some background about myself. I'm a 34-year-old freelance writer. I live in Portland, Oregon, with my beautiful wife Elizabeth and my 10-year-old son, James—both of whom have their own computers—and with a dog, a cat, and a motorcycle.

In 1977, the same year that I got married, a little shop opened up in my neighborhood and began selling "personal" computers. For two grand, you got a box with a whopping 4K of RAM, no operating system, no monitor, and no keyboard. Programming was done in *octal* by flipping switches on the front of the box. No, really. Honest.

I couldn't afford one, but that didn't stop me from wanting one. I had no idea what I would actually *do* with one, but I kept thinking back to one day in 1968 ...

**FLASHBACK!**

... I was 14 and I was hiding from a white-hot June afternoon, wrapped in the air-conditioned semi-darkness of the Hollywood theater, waiting for a new science fiction movie to begin. I was unaware that I was about to witness something so powerful that it would still have an impact on me twenty years later.

The lights went down, and *2001: A Space Odyssey* began.

The film floored me. Blew me away. When I was a little kid spending Saturday afternoons at the movies with my friends, the gaps between films were filled with those black-and-white Buck Rogers and Flash Gordon serials—you know, the ones where you could actually *see* the string that held up the "rocket ship" in the exterior shots. Now, less than ten years later, I sat wide-eyed in the darkness watching this. I'm surprised I even remembered to breathe while *2001* was on the screen. And of all the incredible things I saw that afternoon, the one that made the biggest impact on me was the HAL-9000 computer.

Watching the Discovery crew interact with HAL, I *knew* that I was getting a glimpse of computers as they would actually be some day. And somehow, I sensed that computers would play a large part in my *own* future. So when personal computers began appearing in the late seventies, I was primed. And as Altairs and Imsais gave way to the more affordable Apples and Ataris, I finally took the plunge.

Right into some *very* cold water.

***Two months ago, I sold the whole system.***

**TAKING A DUNK**

I had spent a decade contemplating the sweet melody of intelligent talking computers—but the reality of my first machine was like fingernails on a chalkboard. It was a VIC-20 with 3K of RAM and a tape recorder for data storage. HAL compared to the VIC was like William F. Buckley, Jr., compared to Bill the Cat. Ack.

It was a big disappointment, but I knew that sooner or later technology would let the fantasy of HAL intersect the reality of my budget. I still believe that day is coming. But in the meantime, fueled by impatience, I became a hardware junkie.

Every new computer that hit the market offered to move me one step closer to Computer Heaven, and made the "dream system" I was suddenly stuck with seem as desirable as a burrito milkshake. I couldn't be left behind with "old" technology, could I? No way. So, I did what I had to do—I stepped up. Over and over and over again. And just to prove that you don't have to be a TV evangelist to be an idiot, I offer up the following litany of computers I've owned some time in the last few years:

Timex-Sinclair 1000; Vic-20; Atari 400; Atari 800; Atari 800XL; Atari 130XE; Commodore 64; Commodore 128; Commodore SX; Apple IIc; Apple IIc Plus; Atari 520 ST; IBM XT; and probably others that I've forgotten about. And software? How many programs have I taken the time to learn, only to decide that they weren't "good enough" for me? What little is left of my mind boggles.

In my search to find the most effective system I could afford, I left no stone unturned—and I got *very little done.*

But now, twenty years beyond HAL, the future looks brighter than ever. I earn a living with a computer, using it to write ad copy for businesses, magazine articles, and some fiction. Still, old habits die hard. My most recent system: a Mac Plus with 1 meg of RAM, a 30-meg hard drive, an Imagewriter II printer, and some very nice software. It took me months to learn to operate everything well enough to get consistent, professional results. So what do you think happened next? That's right—two months ago, I sold the whole system.

**WISING UP**

But this time, something different happened. This time, before I could run right out and fill the void with another computer, a simple question finally dawned on me: what the hell was I doing? Over ten different kinds of computers in less than ten years. Why? What

# Portable 100 BACK ISSUES

With over 60 issues, and hundreds of articles, *Portable 100* is THE source for information, programs, and applications for your Tandy Portable Computer. But how do you find what you need among all those issues? The answer is the **updated *Portable 100 Article Index*.** Covering every issue from September 1983 to the combined summer 1989 issue, the index is designed to make it simple for you to find what you need. And at a cost of only $9.00 (postage and handling included), you should buy one today! If you have last year's index, don't despair. Update your index by adding our special 1988-1989 Update Index. It's a bargain at just $4 (P&H included).

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| Month | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 |
|---|---|---|---|---|---|---|---|---|---|
| January | | | Not Published | | Not Published | | | | Not Published |
| February | | | | | | | | | |
| March | | | OUT | | | | | | |
| April | | OUT | | | | OUT | | | |
| May | | OUT | | | | OUT | | | |
| June | | OUT | | | | | | | |
| July | | OUT | | OUT | | combined July/Aug. issue | combined July/Aug. & Sept. (Summer 1989) | Not Published | combined July/Aug. issue |
| August | | OUT | | | | | | | |
| September | Premier Issue | | | Not Published | | OUT | | | |
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was I searching for? I took a long, hard look at my motivations and came to a few conclusions.

I realized that my focus was all wrong. I was still infatuated with computers for what I knew they would someday *become*, rather than for what they can actually *do* right now. And I came to realize that by trying to rush the future, I was cheating myself out of the potential of the present.

So I thought about it. What did I really want—no, scratch that—what did I really *need* in a computer? What applications were important to me? Well, I'm a writer—I needed something I could write with. And because some of the people I write ad copy for are out of state and often need instant results, I needed telecommunications. Anything else? Surprisingly, the answer was no. I keep my appointments and my phone numbers in books, which are easily accessed and never lose data (unless I lose the books). I don't have any reason to use a spreadsheet—with hobbies like computers, photography, and motorcycling, I can keep track of what's left of my finances on my fingers.

OK, what about software? In the past, I've used powerhouse word processors like WordPerfect™ and Microsoft Word™. But in their endless quest to have one more obscure feature than their competitors, those programs have gone too far for me. They've become like the body builders who pop steroids and pump iron until they are grotesque icons of their obsession, barely recognizable as human. I felt the same way about terminal programs like Crosstalk™, which always made me feel like I was trying to kill a fly with a sledgehammer.

So as for what next, it was obvious that I needed to atone myself. I decided to think about the *results* I wanted instead of trying to find the highest-tech way to *achieve* those results. Finally, my new Zenlike mindset brought me to the Tandy Model 200. After exploring the options, I bought the Traveling Software *Sardine* ROM chip for it. This gives me *T-Word*, a great word processing text formatter with superb printer control features. It also gives me a tiny 7,000-word spell checker, also in ROM (and *that's* the way, uh-huh uh-huh, I like it, uh-huh uh-huh) backed up by a 35,000-word spell checker on a 3.5-inch disk. Next, I expanded the 200's memory to the full 72K. I paid $500 for the Model 200, got Sardine on sale for $100, and got lucky and found two used RAM chips for $50 each. So, I'm in the system for $700. I've used it for several weeks. I'm using it now over coffee at a local McDonald's.

So how do I like it? Like pit bulls like poodle snacks. Like perverts like peepholes. I like it a *lot*.

Why? Because it's light enough to take everywhere with me, even on the motorcycle. And because it's immediate—no disks to find, no software to load, just open the lid and hit the switch. This kind of access allows me to work on something the instant it occurs to me, regardless of where I am on those rare occasions that inspiration strikes. That makes this a very intimate machine—and *that* makes it more personal, more HAL-like, than all the other computers I used to own.

And it is that sense of intimacy that prevents a 100 or a 200 from being the simple text box that the "power user" crowd thinks it is. For those who understand its potential, it's the perfect portable idea box.

So the next time a power user sees you typing away and asks you in a superior tone of voice what your little computer is compatible with, do what I do—look him in the eye, smile, and answer: "Me."

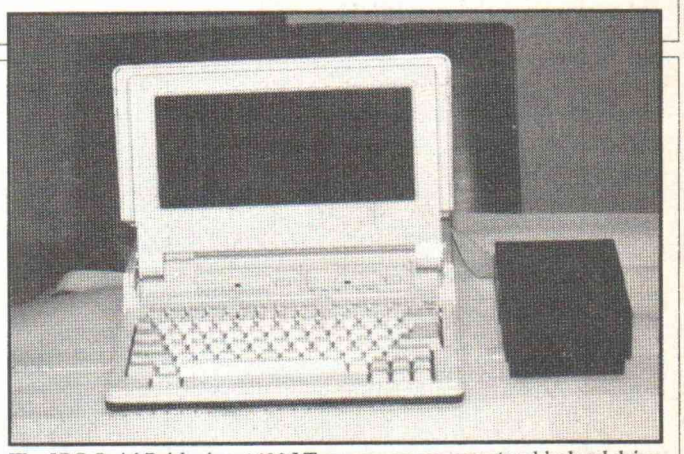
*Michael can be reached by mail at 2125 North Farragut, Portland, OR 97217, on CompuServe (ID 76166,3303), and GEnie (DAIGLE).*

**COMPATIBILITY:** 1400 LT, and other MS-DOS computers.

# *DOS 3.2*, the External Hard Drive, and the 1400 LT

*Avoid the problems of* DOS 3.3
*and still get full use out of your Tandy 1400LT.*

*by Bob Robertson*



*The SPC QuickBrick gives 1400 LT owners an easy way to add a hard drive.*

Adding a hard drive to your 1400 LT ought to be easy; it isn't. There are several stumbling blocks, but if you persevere, you will be rewarded by a faster, more efficient computer system.

I recently found I needed several programs that required a hard disk drive, so I searched through back issues of *Portable 100* for all related articles. I soon decided that I wanted an external unit.

To my great surprise, I discovered that the new technology using the parallel port as the access port does *not* work with the Tandy 1400LT! The reason is that pin 18 on the computer's parallel port was changed by Tandy during design, and is not compatible with the SCSI units.

### SPC TO THE RESCUE

Fortunately, System Peripheral Consultants, maker of the Export and Quickbrick, is remedying this by bringing out units with IDE interfaces that will work with the Tandy 1400LT.

After talking with Bob Richard of SPC, I ordered a Quickbrick QB40 forty-three megabyte drive, ready to install my DOS, understanding that it would come partitioned and formatted with *DOS 3.3*.

When it arrived, I eagerly connected it and followed the procedure to copy *DOS 3.3* files from the hard drive to a diskette and to install my *DOS 3.2* files. I soon discovered I could not access the second partition with *DOS 3.2*, and, knowing I did not want the hassle of *DOS 3.3*, I began looking through my DOS books.

After calls to SPC and *Portable 100*, I realized it was pioneering time and began to research and experiment. Finally, after a lot of trial and error, I got my computer up and running with *DOS 3.2*. This article was typed with *DeskMate Text* on C drive, temporarily saved while writing on E (RAMdisk), and finally saved on drive D.

**I realized it was pioneering time and began to research and experiment.**

One of my first discoveries was that the Tandy MS-DOS *FORMAT* command will not format anything but a 720K floppy disk. I also found that *FDISK* produced some very bizarre results.

I was fortunate enough to find a friend with the Tandy *MS-DOS 3.2 Supplemental Disk*, containing the files specified in my *Tandy 1000 MS-DOS Reference Manual*: *MLPART.COM*, *MLFORMAT.COM*, and *MLPART.SYS*. For ease, and to save switching disks, I put all three files to my *MS-DOS 3.2.* disk.

### SUCCESS AT LAST

Here's what finally did the job (this is somewhat abbreviated and does not show all screen prompts, comments, or instructions in the DOS book):

- Boot up from your A drive with the floppy containing the *DOS 3.3* files that came with the QB40.
- From *DEBUG*, execute *g=c800:5*, to

call in the *Miniscribe Low Level Formatter*, drive = zero, interleave = four).
- Do *A>FDISK* to create a Primary Active DOS Partition (start = zero, end = 629, size = 630)
- Do *A>FORMAT /V /S C:* to select the whole disk, which this program thinks is only thirty-two megabytes.
- Now boot from the A drive with a floppy containing the Tandy *MS-DOS 3.2* (and including the three files from the supplemental disk mentioned above). If this disk has an *AUTOEXEC.BAT* file, rename or delete it. Also, be sure the *CONFIG.SYS* file does not include a device driver like *RAMDISK.SYS*. I wasted a lot of time getting errors trying to format my RAMdisk instead of the real second partition.
- Do *A>MLPART* to create a *DOS2* partition (*Tandy DOS Manual*, start = 630, end = 803, size = 174).
- Change *CONFIG.SYS* to include *DEVICE=MLPART.SYS C: C:* , to tell the computer there are two logical partitions on physical drive C.
- Reboot from A with the *MS-DOS 3.2* disk.
- Do *A>MLFORMAT D:* to format the second nine-megabyte partition (*Tandy DOS Manual*).
- Execute *A>CHKDSK C:* , and then *A>CHKDSK D:* .
- Do *A>SYS C:* to put *DOS 3.2* system files on the QB40.
- Copy *COMMAND.COM* and all the other DOS files to drive C.
- Now put *DEVICE = RAMDISK.SYS* to the *CONFIG.SYS* file and put it on drive C.
- Rename the *AUTOEXEC.BAT* and place it on drive C.

**At any rate, it really makes a difference—I'm adding software like crazy!**

**TESTING IT**

And that should put you in business. You should be able to power down, power up, and the 1400LT should boot from the QB40 (after a very long time for 1400LT internal diagnostics—about two and a half minutes). If you have your RAMdisk enabled, you should be able to find and access drives A, B, C, D, and E.

I hope this helps others avoid the frustrations I encountered in setting up an otherwise fine product.

One of the first differences I noticed was when I printed mailing labels for my wife's flier. Using the address program in *DeskMate*, sorting from name to zip used to take nine minutes on floppy; now it takes thirty-four seconds! That more than offsets the two and a half minute delay at bootup.

At any rate, it really makes a difference—I'm adding software like crazy! And so will you when you add your hard drive.

**COMPATIBILITY:** All Model T and MS-DOS computers.

# Hints for New Laptoppers: Ten Commandments

*Thou shalt read these and become enlightened!*

*by Sean G. Dwyer*

The Tandy 102 and its predecessor, the Model 100, occupy a niche unique among notebook size computers. Versatile, portable, simple to use, the "Model T" sold in such large numbers that programmers and third party manufacturers developed many supporting products. Even more important for new converts, their cost has come down—$354 for the 102 at a recent Radio Shack sale—and used equipment prices are low enough to buy a spare as a backup for the day when the primary unit goes to computer heaven. Speaking of heaven, that brings to mind the Ten Commandments of Laptop Computers ...

(1) Thou shalt know thy laptop's mission.
(2) Protect thy laptop from bumps, wetness, and hot cars.
(3) Be not wasteful with RAM
(4) Envy not thy neighbor's RAM if thine own can be enriched.
(5) Thou shalt not add weight unwisely.
(6) Thou shalt learn to transfer files.
(7) Thou shalt document transfer protocols without delay.
(8) Only pioneers should be first with the latest computers.
(9) Thou shalt not think while on-line.
(10) Thou shalt not fear to change thy laptop's mission.

Without meaning to offend anyone's sensibilities, this list reflects one person's recommendations since buying a T102 two years ago. All of the items and peripherals mentioned are described in more detail in advertisements in *Portable 100* or are available through Radio Shack.

**(1) KNOW THY LAPTOP'S MISSION**

The first thing a new laptopper must do is understand how it is to be used. A laptop intended to be an extension of a desktop or mainframe computer requires file transfer capabilities between it and the larger computer and there may be no need for storage dedicated to the laptop itself. If it is to be used as a "stand-alone" unit, external storage and access to a printer are more important. My reason for buying a T102 was the access to aviation weather reports provided by its portability and built-in modem. Your laptop's mission will determine how relevant these "commandments" are for you.

**The first thing a new laptopper must do is understand how the laptop is to be used.**

**(2) PROTECT THY LAPTOP**

The portability and internal power of the Model T allow it to be used in places that rarely see a computer. Mine has accompanied me on business and camping trips and in wet airport hangars. Each environment made its own demands for protection.

Large Zip-Lock bags (13.5 in X 18.5 in) do a serviceable job of "ruggedizing" the computer for outdoor use. You can even enter data with it sealed in the bag, although I would not try to type a report this way. The Zip-Lock bag is also the key to keeping the computer reasonab'y cool. When my son and I camp at the Oshkosh Fly-In we bring an extra cooler reserved for cameras, film, radio, computer etc (Oshkosh is not your "back to basics" campground). With a bag of ice on the bottom and all the electronics isolated in Zip-Locks, we lock the cooler in the car rather than leave it in the tent. Although the car inevitably gets to temperatures that could permanently damage an LCD screen or NiCd batteries, the various devices are "temperature protected".

The leatherette case that comes with the computer is thin enough for briefcases but it does not provide much shock protection. This can be enhanced by urethane foam in two plastic page protectors (the kind that completely enclose the page and have a separate strip at the side with holes for a ring binder). However, protection is not the only role for the cushioned pads. They also provide a place to store hard copies of information which otherwise might be consuming RAM.

**(3) BE NOT WASTEFUL WITH RAM**

"Random access memory" to computer jocks or "*really* available memory" to those of us in the raggedy-ass multitude, the 32K RAM in the Model T is too precious to waste on something that could be read more easily on a hard copy. By all means generate and update an address list on the computer, but store it on some external memory device, not in

RAM. A printout (in the most compressed print available) in the cushioned protector pads described above wastes neither RAM nor space in the cushioned pad.

The extRAM memory expansion unit from EME Systems (see ad on p. 34)provides an exception to this rule. In one of its many personalities extRAM turns the option ROM socket underneath the computer into what is essentially a second RAM memory bank where utility programs can be stored until needed (ROM = "relatively obscure memory"—it's there but you can't get at it most of the time). When used as a storage bin in this way it can be loaded with programs and files right down to the last hundred or so bytes. A 32K bank is really quite large if you use it just for storing programs and do not have to reserve space to run them. When you want to add something new to the bin, simply cull out some infrequently used item and replace it with the new file or program. Individual files can be added to extRAM without exchanging the whole bank as long as *FLOPPY.CO* is available and used in that bank.

A waster of memory that can easily be avoided is the use of unnecessarily sophisticated programs. Why consume the whole option ROM space with a word processing chip if you will be using a desktop computer to format documents typed on the laptop? The program *PRINT.BA* consumes a mere 2.6K and is one of several very single-minded utility programs written when the Model 100 was sold with just 8K. They are found in *Portable Computing with The Model 100*, a Radio Shack book and tape (catalog number 26-3820).

Don't write programs that combine unrelated functions into a single awe inspiring program that has everything but a kitchen sink. If it is unlikely that all the functions will be used with the same frequency, it would be more RAM efficient to write individual programs of 1-3K, i.e., small enough that the most frequently used ones can be left on the computer most of the time.

### (4) ENVY NOT THY NEIGHBOR'S RAM ... ENRICH THINE OWN

The first RAM issue a new owner of a Model 100 or T102 should address is whether or not it contains a full 32K of RAM. Model 100's have been around long enough that most of them have been upgraded from the original 8K, but you can still run into a T102 with only 24K. An easily installed chip costing $14.95 from Radio Shack (Part Number 26-3817) would boost it up to 32K.

While the RAM of the Model 100/102 is limited to 32K in any one bank, the advertisements in *Portable 100* reveal many ways to expand it to what are effectively several side-by-side banks. Which should you buy? Well, it depends on the mission of your laptop and how much RAM you will need.

The mission of my laptop required the telephone connector cable. It is also both the first and least expensive means of "expanding" RAM that I recommend. How does this expand available memory? Simple, it allows you to interact with any mainframe computer that can be accessed via modem. Files can be uploaded and downloaded later at your convenience. On a four day business trip, the reports for my first three days are usually at the office before I am. The personal area in CompuServe can be used for this purpose also.

The second purchase that I recommend is the Node RAMPAC. Small enough to fit in a shirt pocket, it provides storage space for up to 256K of files and programs, plus something that is very important if you use a lot of conflicting programs: rapid recovery from a cold start, even if you are miles from home. When typed in fine print the nine-line loader program by Paul Globman is short enough to be taped on the face of the RAMPAC. By entering and running this program you regain access to all the files stored on the RAMPAC, a critical capability if you rely on your laptop for business trips and you do not carry a disk drive with you.

**I made the mistake of bringing a loaded shoulder bag on a business trip once.**

Although other disk storage alternatives exist (e.g., direct file transfer to a desktop computer or *Disk+* from TMN East, which lets you access a desktop's disk drive), my next recommended purchase would be the Tandy Portable Disk Drive 2 (PDD-2). It provides unlimited storage and is small enough to be portable if you really need to bring it along. Importantly, it also provides easy access to commercial programs available on disks, plus a means to interchange ROM chips without changing hardware. The latter function requires the next recommended purchase, extRAM.

**PDD-2 to/from IBM via *LapDOS***

1) On IBM type *LAP <ENTER>* to get split screen with files on PDD-2 and IBM disk.
2) Put IBM disk in drive A and type *L*. Respond *A:* when asked for drive ID.
3) Place cursor over file to be transferred and type *X*. Backspace to change the extension to *.TXT* if going to IBM or to *.DO* if going to Tandy. Press ENTER.
4) If going to IBM, open WORD and then the .TXT file. Respond "OK" when asked if translation is from TEXT.

*Figure 1: LapDOS file transfers.*

The many personalities of extRAM were previously described in Stan Wong's review (November '90 *Portable 100*). Programs that come with extRAM let you transfer "images" of ROM chips to a disk on the PDD-2 and then exchange one image for another as easily as loading a file from a disk. By eliminating the hassle and worry associated with changing ROM chips, extRAM expands the utilities of the Model T as far as commercial ROM chips and your wallet can stretch. I find it useful to create complete extRAM banks for different purposes (e.g., one for work, another for hobby, a third with data banks and related utility programs, etc.) and then store images of these banks onto disks as though they were the ROM chips mentioned above, a little bit like creating "customized ROM chips". Another particularly useful personality of extRAM is the storage of short, single-minded programs like *WGTBAL.BA* (May '91 *Portable 100*) or printer utility programs like *PRINT.BA*. They can be called upon to work on files in the main memory but their storage makes no demands on main memory RAM.

This list of RAM enrichment possibilities is far from complete and the reader is referred to advertisements in *Portable 100*. I will leave the subject with the thought that "Mega-RAM should be paid for by employers."

### (5) THOU SHALT NOT ADD WEIGHT UNWISELY

Laptops were designed to be port-

**M100 to IBM**
**(*Word for Windows*)**

1) Connect M100 serial interface to IBM COM 1 port using cable and null modem.
2) M100: Set *TELCOM Stat* to *58N1E*.
3) IBM: Go to *Accessories*. Under *Settings* set 1200bd, 8 bits, No Parity, 1 Stop bit.
4) IBM: Select *Transfer* and *Receive File*.
5) IBM: Enter a file name, e.g., *TEST1.TXT*.
6) M100: F3 (*Up*), enter filename and width.
7) IBM: After transfer, select *Stop* and *View File* under *Transfers*, *Append LFs*.
8) IBM: Exit *Accessories* and open *Word*.
9) Open *TEST1.TXT* and change from *TEXT* when asked. Save using *.DOC* extender.

*Figure 2. M100 to IBM via null modem.*

able. Keeping one so means that you need to resist adding weighty peripherals, cables, adaptors etc. My "minimum equipment list" when traveling includes the T102 in information loaded protector pads, RAMPAC, extRAM in the ROM socket, telephone cable, and a set of AA batteries. The extra weight amounts to less than half a pound and everything easily fits into the leatherette case.

I must admit, however, that my piecemeal entry into the world of Tandy laptops left me with a lot of peripherals and doodads, including a shoulder bag with side pockets (one for an umbrella?), null modem, gender changer, printer cable, RS-232 cable, disk drives, *LapDOS*, *Ultimate ROM II*, bar code wand, and a host of programs. I made the mistake of bringing a loaded shoulder bag on a business trip once. "Add no weight unwisely" is now a firm rule!

**(6) THOU SHALT LEARN TO TRANSFER FILES**

The Model 100 became a favorite of sports writers and journalists for several reasons, not the least of which was its telephone communication capability which let them upload stories before the jocks were out of the showers.

It is not necessary to understand *Xmodem, Kermit*, Miss Piggy or any of the rest of that gobbeldygook to upload and download files with a Model T. If you think of the *F2* and *F3* keys in *TELCOM* as having meanings like "capture" and "recall" rather than "download" and "upload", you will not feel the need to respond to questions about what protocol you are using. For example, to send electronic mail via CompuServe, draft the note using *TEXT* before logging onto CompuServe. Type *GO MAIL* and select the *COMPOSE LETTER?* option. Then you simply "recall" the note (*F3* followed by the name of the file) and finish with */EXIT*. You will be prompted for the address to which the note is to be sent.

Capturing a document is just as simple. If you want to know the current weather conditions at Milwaukee Airport enter *GO AWX* on CompuServe. When the menu settles down, press the *F2* key and provide a filename when asked. Then enter *SA MKE*. Something like the following will be captured for off-line analysis: *MKE SA 1552 3 SCT M10 BKN 60 BKN 2H 069/78/76/2015G28/ 974/ TCU SW-W-NW*. Roughly translated it says, "Don't even think about flying unless you want to fly in clouds, gusty winds, and thunderstorms."

**It is not necessary to understand *Xmodem, Kermit,* Miss Piggy or any of the rest of that gobbeldygook**

File transfers can be accomplished quite inexpensively by direct connections between computers using an RS-232 cable and null modem. On an IBM I found it easiest to interface through the COM 1 port. On a Mac Plus it worked out easiest to go through the modem port using a Mac-to-Hayes cable. Even early Ataris with their oddball cable configurations are amenable to direct connection to the Model T. If you can find a 25-pin cable designed to go from the Atari to a third party Hayes-compatible modem, then you only need a 5-dollar null modem from Radio Shack to complete the connection to the Model T. If such a 25-pin cable is not available then the connection can be made by attaching the telephone cable from the back of the Model T to the telephone port of an Atari compatible modem such as the Supra 300AT. There are as many different protocols as there are computer and software combinations and several are described in Library 3 of M100SIG on CompuServe.

File transfers to and from desktop computers can be easily accomplished with commercial programs such as *LapPDOS* and *100duet*. I recommend them if you are going to use a Model T as a workplace extension of a larger computer. The IBM PC I use at work has *LapDOS* on its hard drive and is connected to a Tandy PDD-2. Transferring Model T files is as easy as loading files from the IBM drive and requires no further changes in cables.

The most rudimentary file transfer is to a printer, and it does not take a fancy word processing program to produce italics, bold print, etc. With *PRINT.BA* in the extRAM bank and printer control codes imbedded in a text file, a low-cost printer can do a fine job.

Where do you find the printer control codes? They are probably discussed in your printer's instruction manual, but if you are not a computer jock it may take you the two years it took *me* to understand how to use them in a text file. For some reason, my Panasonic's printer code instructions were limited to *BASIC* programs. If you are having the same problem, try *^P ESC 4* (while holding down the *CTRL* key, press *P*, then release both; next press *ESC* and then *4*) and *^P ESC 5* to switch italics on and off respectively. Similarly, use of *^P ESC E* before

**M100 to Mac Plus**
**(with *VersaTerm Pro*)**

1) Connect Mac modem port to Mac-to-Hayes cable to null modem to M100.
2) On Mac open *VersaTerm Pro* folder, double click *Versaterm Pro* icon.
3) Under *Settings*: 600 baud, 8 bits, No Parity, 1 Stop bit, Xon/off checked.
4) Under *File* select *Save Stream*. When asked for name type *Screen Text* and click *Save*. Answer *yes*.
5) On M100 type *POKE 63066,1* in *BASIC*, *TELCOM* settings: *F3*, then *48N1E*.
6) Press *F4* to get to *Term* and then *F3* and provide filename when asked.
7) Press *ENTER* or provide line width.
8) When transfer ends, use Mac mouse to select the whole text. Under *Edit* select *Copy*. Under *File* select *Quit*.
9) Open *Word*. Under *Edit* select *Paste* and under *File* select *Save As*.

*Figure 3. M100 to Mac Plus via null modem.*

**Atari 800XL and M100**
(RS-232 cable and null modem not required)

(1) Plug Supra 300AT modem into second joystick port of Atari. Plug beige phone wire from M100 into back of 300AT modem.
(2) Load Atari with *Smart Terminal* program key (*f*) to Half Duplex; no other change.
(3) Enter *T* on Atari (terminal).
(4) M100 *TELCOM*: Press *F3*, enter *M7I1E*, switch to *ANS* on left side, press *F4*. M100 should beep and enter *Term* mode. Key *F4* until *Half* appears on screen.

Atari to M100:

(a) Atari: Enter *B* (modem <-> disk direct)
(b) Atari: Enter 2 (disk -> modem)
(c) Atari: Enter filename (e.g., *D:test.txt*)
(d) M100: Press *F2* (*Down*); enter filename.
(e) Atari :Press *Option* to begin download.
(f) M100: When complete, press *F8*, enter *Y*, and save downloaded file to Tandy disk.

*Figure. 4 Atari 800XL to M100 without null modem.*

a string of words will switch on bold print and *^P ESC F* afterwards will return to normal print. Note that this works with many printers but requires a printer utility such as *PRINT.BA*. If you just press *SHIFT-PRINT* on the M100 the *^P* will be printed rather than treated as indicating and impending printer code.

### (7) DOCUMENT PROTOCOLS WITHOUT DELAY

Why should you document transfer protocols immediately? Given the modern business world's love affair with IBM or Macintosh, relatively few corporate computer jocks specialize in the early Tandy laptops. Thus, you may find that you are the in-house expert in connecting the Model 100/102 to desktop or mainframe computers. Make life easy for yourself when you successfully transfer a file for the first time. Write down exactly what settings and actions were used and put a copy (compressed print!) in the protective pad mentioned earlier.

### (8) ONLY A PIONEER SHOULD BE FIRST WITH THE LATEST

Just as the prairies are littered with the bones of pioneers, the modern business world is littered with underutilized computers. My IBM desktop at work contains many bells and whistles still in a state of *virgo intacto*. Many computer manufacturers forgot the KISS Principle ("Keep It Simple, Stupid!") and the siren song of marketing's creative mendacity can prove irresistible. Succumb at your peril (and your wallet's).

Fortunately, you do not have to be a pioneer with an oldie like the Model T.All that is needed to gain access to indepth information regarding it is (a) a subscription to *Portable 100* magazine and (b) CompuServe's Model 100 Forum (M100SIG). If you are not a regular visitor to the latter you may be a victim of the very understandable fear of signing onto what may seem be a cash register in overdrive. Fear not, a typical session on M100SIG could go as follows:

(1) Dial into CompuServe while preceding its telephone number with **70*. The **70* has the effects of (a) driving teenage daughters right up the wall, (b) deactivating Call Waiting, (c) preventing you from getting blown offline when somebody dials your Call Waiting enabled telephone (remember the cash register!).
(2) Once connected type *GO M100SIG* and press *ENTER*.
(3) In the Forum five commands do much of the work:
    (a) *MES;SCA THR PRO* (messages-scan through prompter);
    (b) followed by either *SK* (skip) or *MAR* (mark);
    (c) *REA MAR* (read marked items);
    (d) *OFF* (stop the cash register).

**"When God made time, he made plenty of it!"**

The first command identifies messages by subject and sender. Depending on your level of interest, skip the message or mark it. Before entering the *REA MAR* command, the *F2* key is pressed and the full text of messages that follow is recorded on the M100/102. On uninteresting nights connect time is 2-3 minutes. Nights with interesting stuff are another story, but that is my choice.

### (9) THOU SHALT NOT THINK WHILE ON-LINE

Paying by the minute while on-line conflicts with an attitude deeply ingrained in the psyche of any Irishman ("When God made time, he made plenty of it!"). This commandment applies primarily to on-line communications with pay-by-the-minute services and to those of us who type with two fingers and hunt for the keys. Any time I make the mistake of typing a reply while on-line with CompuServe, there are so many delete/backspaces in the note that I wonder how readable it is at its destination. This is not the case if the missive is prepared off-line and then uploaded in one shot, a simple operation on the Model T that requires just *F3* and the name of the file.

### (10) FEAR NOT CHANGE IN THY LAPTOP'S MISSION

The versatility and capabilities of the Model T are such that you are likely to change its mission several times as you learn more about them. Initially a safety device for a hobby and now a routine business tool, my T102 has also done duty as an interface between a Mac Plus and a Panasonic printer (connect the printer to the T102 and that to the Mac; select *TELCOM* and *F5* before sending file from Mac). Having recently acquired the complete set of back issues of *Portable 100*, this T102's mission is likely to change again in the future. A gold mine of applications, tricks, and peripherals for uses that range from school rooms to heavy industry to jungles to space shuttles, articles in the back issues are proof that Yankee ingenuity is still alive and well. A new laptopper would find them enlightening.

**PRINTER CODES:**
**PANASONIC 1080/M100**
(Do not include spaces shown below.)

| | |
|---|---|
| Start Italics: | *^P ESC 4* |
| Finish Italics: | *^P ESC 5* |
| Start Bold Print: | *^P ESC E* |
| Finish Bold Print: | *^P ESC F* |
| Start Underlining: | *^P ESC -1* |
| Finish Underlining: | *^P ESC -0* |
| Start Double Width: | *^P ESC W ^A* |
| End Double Width: | *^P ESC W ^@* |
| Automatic Centering: | *^P ESC a1* |
| Automatic Left Justify: | *^P ESC a0* |
| Start Pica Pitch: | *^P ESC P* |
| Start Elite Pitch: | *^P ESC M* |

*Figure 5. Fancy printing from M100. To produce ^P, press P while holding down the CTRL key, then release both.*

# No Wordwrap in TEXT

I recalled mention of *NOWRAP* in a back issue of *Portable 100*, but I am unable to hook into your bulletin board. So I devised my own program, *TEXTNW.BA* to enter *TEXT* in my Model 100 without the word wrap feature.

Credit must be given to Mo Budlong for his article (December 1988) which gave me the idea, and the program approach to create *TEXTNW.BA*.

The variable *T$* in line 20 contains the 24-byte machine language code needed, hence no specific RAM location is required for running the program. The 24 bytes are 126, 35, 235, 237, 95, 205, 11, 76, 205, 175, 32, 35, 235, 237, 227, 175, 111, 103, 34, 231, 246, 195, 110, 95. Except for codes 11 and 34, look up in the back of your manual to see which key or *GRPH/CODE* key combination is required to produce the correct byte values. Check your work twice or risk a cold start.

Once entered and saved, position the *MENU*'s wide cursor over *TEXTNW.BA* and press *ENTER*. When prompted for the file's name, type it without the extension and press *ENTER*. You are now in *TEXT* without word wrapping. This works with both new and old files.

**Michel R. Kelton**
**75116 Paris, France**

```
10 DEFINT B,C,I,V:ON ERROR GOTO 50:
   IF MAXFILES=0 THEN MAXFILES=1
20 T$="~#■■■■Ñ"+chr$(11)+"L¶¶ #■■■■ ¶og"+chr$(34)+"■■■ ¬0n■■■■":
   V=VARPTR(T$)+1:C=PEEK(V)+256*PEEK(V+1)
30 FN$="":PRINT@130,CHR$(27)"K";:INPUT"File Name ";FN$:
   B=ASC(FN$):I=(B<59)+(B=127)+(B=255)+(LEN(FN$)>6):
   IF I THEN ERROR5
40 FN$=FN$+".DO":OPEN FN$ FOR APPEND AS 1:CLOSE 1:
   CALL C,,VARPTR(FN$)
50 BEEP:RESUME 30
```

*Listing 1. A short program to disable wordwrap in TEXT.*

## A MODEL 100 IN THE KC-85

Thanks to Dr. H.R. Luxenberg's article (FORUM, November 1988), I took my Kyocera 85 and inserted a Model 100 ROM (ordered from Tandy, and obtained at a special price) into its ROM socket. Alas, a blank screen resulted! A quick call to Dr. Luxenberg revealed he had an early Model 100. With the information he gave me, I took the Model 100 ROM pinout (from the Model 100 Technical Manual) and compared it to the KC-85 standard ROM pinout (A 27C256 EPROM standard)

The comparisons are in Figure 1. I wire-wrapped the Model 100 ROM pins (after straightening them out horizontal to the chip). I connected the wire from the pins, by tack soldering, to the appropriate socket slot in the KC-85 standard ROM socket. This leaves the socket still usable if done carefully. I inserted the Model 100 ROM and the KC-85 became a Model 100 (less the internal modem and bar code reader). The only requirement is that you buy a Model 100 ROM. They are scarce, and the price is going up all the time. Readers interested in more details may send me a stamped, self-addressed envelope.

**Ernest A. Baldini**
**453 Watts Way**
**Cocoa Beach, FL 32931**

| Function | Model 100 | KYO-85 | Function |
|---|---|---|---|
| VDD | 1 | 28 | VCC |
| A10 | 2 | 21 | A10 |
| A11 | 20 | 23 | A11 |
| -DE | 21 | 22 | -OE |
| A13 | 22 | 26 | A13 |
| -CE | 23 | No pin, use -ALE on PCB | |
| A12 | 24 | 2 | A12 |
| A9 | 25 | 24 | A9 |
| A8 | 26 | 25 | A8 |
| -CS | 27 | 20 | -CE |
| A14 | 28 | 27 | A14 |

*Figure 1. Standard ROM pinout comparisons between the Model 100 and the KC-85.*

## TO PRINT OR NOT TO PRINT

Here's an easy way to avoid locking up your computer should your printer be off or disconnected. The Model 100 uses port 187 as the printer status port. By checking here with the *INP (187) AND 6* command, you can determine your printer's status. A two means the printer is ready, zero means it is connected but off-line, six is the code for printer not connected, and four means the printer is disabled (see below) or that it is out of paper.

To disable the printer port, and avoid a hangup when no printer is connected, go into *BASIC* and type *POKE 64228,136* and *POKE 64229,20*. To restore them, type *POKE 64228,243* and *POKE 64229,127*.

**Eugene Miller**
**Wolf Summit, WV**

*I remember that printer test trick from long ago on my TRS-80 Model I. Unfortunately, it doesn't work on all printers. If it did, the software designers would have built it into the Model 100 ROM for us.*

*As in everything else with computers, not every manufacturer agrees to use the standards (for example, from the Model I days, the Gorilla Banana printer didn't). For most printers this will work. I suggest trying it out with your printer. You may find that if these codes don't give the results listed, other codes will appear that correspond in meaning. Just use those other codes in your software, instead.*

*The pokes to disable the printer port are internal to the Model 100 and should work just fine in preventing printer hangups.*

## CARE FOR A MODEL 100—DANISH?

In the December 1990 issue, Göran Ohlin wanted to redefine the keyboard. While you are trying to do it the hard way, here is something Göran can do in the meantime. A simple program,

written in *BASIC*, can convert certain characters typed on the Model 100 to international characters on the printer. This will not entail having to use *GRPH* and *CODE* keys while typing.

Your printer must have an international character set. My Panasonic KX-P1124 has that. Set your printer to the mode corresponding to the language you want.

The basic idea is this: The character *ö* in the Swedish language has decimal 92 in the international character set (this information is available in the printer manual). All you have to do to print *ö* on your printer is to feed the printer the Model 100 character with decimal 92. This is the backslash (\), the *GRPH*-keys; again this information is available in the Model 100 manual.

Rather than type these awkward keys, choose another key, such as the left bracket ([) or right bracket (]) key as a substitute for the *ö* character. When you are finished with the document, run the *BASIC* program below (Listing 1). The program scans your document and rewrites it with a new name, replacing the substitute character with the *ö* character. The name of the file will be the same as the original, except it will start with an *X*.

When you print the file, the *ö* character will be printed.

I have done this successfully for quite some time writing letters in Danish. The program is written for the six Danish characters that are different from the characters in English. To make life easier, I chose the keys on the Model 100 keyboard that correspond to the positions on a Danish typewriter. If the letter is long, the conversion process can take a long time (thirty seconds per 1K of document)

To save time, corrections should be made in the new file where the special characters look different from those that you typed. Remember, the computer must have memory available corresponding to the length of your letter for the new file.

**Iver Iverson**
**Atlantic Beach, FL**

```
1 REM Convert M100 English text to Danish
2 CLS
3 MAXFILES = 2
5 PRINT"Program to convert Danish letters
typed on Model 102 to Panasonic KX-P1124
printer codes."
10 INPUT "File name (Max 5
Characters)";NA$
20 OPEN NA$+".DO" FOR INPUT AS #1
25 OPEN "X"+NA$+".DO" FOR OUTPUT AS #2
27 CLS
28 PRINT @ 130, "WORKING"
30 REM  Read and convert document
33 Q$ = INPUT$(1,1)
36 IF ASC(Q$)>96 AND ASC(Q$)<123 THEN GOTO
100
40 IF Q$="'" THEN Q$=CHR$(123): GOTO 100
50 IF Q$= CHR$(34) THEN Q$=CHR$(91): GOTO
100
60 IF Q$="[" THEN Q$=CHR$(125): GOTO 100
70 IF Q$="]" THEN Q$=CHR$(93): GOTO 100
80 IF Q$="/" THEN Q$=CHR$(124): GOTO 100
90 IF Q$="?" THEN Q$=CHR$(92): GOTO 100
100 PRINT#2,Q$
105 IF EOF(1) THEN GOTO 30
200 REM
202 CLOSE
205 CLS
207 PRINT@130,"DONE"
208 BEEP:BEEP:BEEP
210 END
```

*Photo 61. Tandy's upgrade to their popular 1100FD, the* 1110HD, *adds a 20MB hard drive without adding undue weight or increasing its size.*

## Low Cost 1110HD

The *1110HD* is a sturdy, compact (2.4 x 9.8 x 12.1 inches) notebook computer that weighs only six and six-tenths pounds. It fits neatly in a briefcase or a knapsack, making it an ideal companion for the business traveler or student who needs quick computing and portability.

At $1,199, Tandy claims that the 1110HD is one of the most affordable hard drive notebook PC's available today.

While the 1110HD is a low-cost, compact PC, it has a V-20 microprocessor, with ten-megahertz clock speed, zero wait state, and comes with 640K of standard memory. The system also includes a 3.5-inch, 720K floppy disk drive and a fast internal 20MB hard disk with a 23-millisecond access speed.

The *MS-DOS 5.0* operating system and Tandy's easy-to-use *DeskMate 3.5* personal productivity software are factory installed on the hard drive for instant startup computing. *DeskMate*'s friendly Graphical User Interface, with its familiar pull-down menus and pop-up dialog boxes, guides the user through nine productivity applications including word processing with a spell checker, a worksheet, filer, calendar, address book, *Hangman* word game, *Draw*, and a phone accessory. Programs can be accessed with the 1110HD's enhanced 84-key keyboard or with the point-and-click convenience of a Tandy mouse (sold separately). *DeskMate* also includes a helpful tutorial program.

The Tandy 1110HD features a sharp-contrast, reflective LCD with a nine-inch diagonal measurement, 80 x 25 characters, and 640 x 200 pixel resolution. Other features include a removable, rechargeable battery that provides four hours of continuous computing, a travel-size AC adapter/charger, parallel port, and a serial port.

Optional accessories include a 2400 bps internal modem ($199.95), a replacement battery pack ($29.95), a soft carrying case ($39.95), or a leather carrying case ($99.95). The Tandy 1110HD is backed by a one year in-store warranty and is available at nearly 7,000 participating Radio Shack stores and dealers nationwide.

For more information, please call or visit your local Radio Shack store. *Or circle 61 on your reader service card.*

## New Tandy Hard Drive

Tandy has announced the availability of the Tandy *1800HD* notebook computer, complete with 1.44 MB floppy drive and 20 MB hard disk. The 1800HD is an enhanced version of the 1500HD. The 1800HD offers more capability and features while retaining the low weight and slim-line design.

The 1800HD's 80286 processor operates at an increased speed of 12 megahertz. Other enhancements include a "triple supertwist" backlit VGA display with thirty-two shades of gray and 1 MB of RAM, expandable to 3 MB.

The sleek black design, measuring only 1.7 x 12.2 x 10 inches, is attractive, convenient to carry and ruggedly built. The Power View System features indicators for power on/off and battery/charging status that are clearly visible even with the lid closed. Tandy's high-quality 84-key keyboard provides true 101-key emulation, and the exclusive Tandy key-switch system allows interchanging the *Caps Lock* and *Ctrl* keys to suit users familiar with either typewriter or keyboards.

A rechargeable battery operates the computer for up to three hours between charges. For extended use in the field, a spare battery is lightweight, easy to carry, and slips in place in seconds. The UL-listed, 110 VAC battery charger is included and will also power the 1800HD. The charger weighs only weighs 9.6 ounces, making the total "traveling weight" of the 1800HD one of the industry's lightest for a system in its class.

The Tandy 1800HD comes with the *MS-DOS 5.0* operating system and Tandy's *DeskMate* productivity software. *DeskMate* consists of a popular graphical user interface and ten easy-to-use applications. Without purchasing any additional software, 1800HD users have access to a handy word processor, spreadsheet, filer, communications program, and more. All software is preloaded on the fast, 23-second hard disk, so the computer is ready to use immediately.

The 1800HD includes ports for connection of a serial device, parallel printer, and external disk drive. Two optional, internally-mounted accessory modems are available. One is a conventional 2400-bps modem, while the other is a 2400-bps modem that includes a 9600-bps fax send capability.

Optional accessories include additional memory, spare batteries, and a choice of three carrying cases.

The new Tandy 1800HD notebook computer is FCC listed for Class B (home or office) use. The suggested retail price is $1,999. For more information, please call or visit your nearest Radio Shack store. *Or circle 62 on your reader service card.*

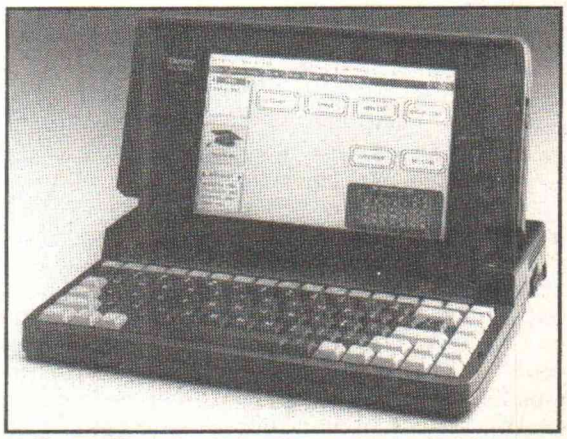


*Photo 62. The* 1800HD *provides high performance in a notebook format.*

**COMPATIBILITY:** Tandy 100, 102, 200.

# Yes, Sir, Dot's My Baby!

*For text formatting power, you can't beat a dot—period.*

*by Mike Nugent*

Back for more, eh? Good for you! And good for your documents, too! This month you'll gain even more power. But first ...

After considerable thought, I've opted to run this column mainly in "slow mode" for the benefit of beginners, who deserve all the help we can provide. However, we'll soon delve into the kind of heavy-duty nitty-gritty that will reward you experienced *Super ROM* "veterans" for your patience and understanding. (Thanks!)

Now, let's continue to take command of our printers, take control of our output, and just become generally groovy individuals, okay?

## DOT POWER

Last month I asked you to experiment with global defaults and font control codes to find your own personal favorites. (You did experiment, didn't you?) Now we'll harness the power of dot commands, which override the global defaults and give you greater control over your printer, and thereby, your documents. See *DOT COMMANDS* (p. 59) in the *Write ROM* manual.

Dot commands let you control, and change at will, your margins, line spacing, justification, centering, headers and footers, indentation, etc. They let you include entire other files in your printout and/or chain multiple files together. They even let you merge information from another file into your document to produce form letters. As usual, you'll need to play with these features (hands-on, right?) to get a feel for using them.

Last month I discussed using both pica and elite fonts within the same document. Let's continue with that example.

As you'll recall, we assumed an Epson-compatible printer that defaults to pica font. We assigned printer codes to the *Alt* printer feature (see p. 90 of *PRINTER FEATURES*), using *CODE-e* to turn elite on and off. We then created a test document, embedded some *CODE-e*'s in it, previewed it with *Map*, and printed it.

Remember how *Map* showed a different picture than was actually printed? That's because we didn't tell *Write ROM* that elite font prints more characters per line than pica font does. We didn't adjust the margins accordingly. We will now, using dot commands.

## MARGINAL THINKING

Figure 1 is a sample test document such as you may have created. Note the *CODE-e*'s at the beginning and end of the second paragraph, for turning elite on and off (they look like the letter "e" with two dots above it).

Notice how it looks on the *Map* display. Because you've left the margins set to the factory defaults of 8 (left) and 64 (right), the second paragraph appears to be the same width as the other paragraphs. (What little difference you see is simply a chance function of the automatic word wrap.)

But look at the actual printout! See how the second paragraph, the one in elite, is actually squished to the left? That's because, as I pointed out last month, *Map* shows a pixel for each character in a line. With margins of 8 and 64, you get 56 characters per line. And since elite prints 12 cpi (characters per inch) as opposed pica's 10 cpi, elite's 56-character lines take up less space when printed. In short, they're shorter!

```
Dear Fred,◀
◀
The answer to your needs will be found
in your ?Write ROM? manual in the
section on DOT COMMANDS, page 59:◀
◀
ë?This device, called "dot commands," is
 a series of simple codes embedded by
you in the article you are writing.
These dot commands take over and change
the margins, center or justify and make
other changes on the next piece of text
that follows until you embed other
commands that change it back to the same
 settings as the function keys or some
other way you want it.?ë◀
◀
By experimenting with dot commands,
Fred, you'll gain much greater control
over the appearance of your documents.◀
◀

NOMARG.DO                    [redacted]

Page 1

 Write ROM
©PCSG 1985
```

```
     Dear Fred,

     The answer to your needs will be found in your Write
     ROM manual in the section on DOT COMMANDS, page 59:

     This device, called "dot commands," is a series of
     simple codes embedded by you in the article you are
     writing. These dot commands take over and change the
     margins, center or justify and make other changes on the
     next piece of text that follows until you embed other
     commands that change it back to the same settings as the
     function keys or some other way you want it.

     By experimenting with dot commands, Fred, you'll gain
     much greater control over the appearance of your
     documents.
```

*Figure 1. Comparison of sample text file, its map, and actual printout, using default margins, no dot commands, mixed pica and elite fonts.*

## A LITTLE SIDE TRIP

While you absorb that, I'll mention another graphic code you may have noticed here and there within the document. That weird character resembling some sort of connect-the-dots letter "Y" is produced by pressing *CODE-i*. I've assigned *CODE-i* to the *PRINT Code Emph* key (*F3*) to control italic printing. For Epson printers, the codes are *ESC-4* (italic on) and *ESC-5* (italic off). I used the

same method we used last month to assign elite font to *PRINT Code Alt (F5)*. And it works the same way: Press *CODE-i* where you want italic printing turned on, then *CODE-i* again where you want it turned off.

I normally italicize program names, like *Write ROM, Super ROM, Lucid*, etc. I also italicized the second paragraph of our sample document to make it further stand out and to indicate that it's an excerpt from the *Write ROM* manual. You should try to do it on your Model T and printer as well, like you did last month for the elite font. I'll let you try looking up the codes on your own. If you get stuck (AFTER READING THE MANUAL!), let me know, and I'll cover it in greater detail in an upcoming column.

**The results? Not necessarily pretty, but certainly instructive.**

Now back to those short lines ...

**WYSANWYG!**

You've probably seen the term WYSIWYG (What You See Is What You Get). However, as Figure 1 suggests, we need a new term for dealing with the *Map* function. How about *WYSANWYG* (What You See Ain't Necessarily What You Get!)?

Combining different type sizes in a single document obviously calls for Some Serious Margin Magic, so let's give it a shot. We could start by trying a left margin of 10 and right margin of 75, since I mentioned last month that these generally work well for elite font.

In Figure 2 the default margins (8 and 64) are fine for the pica font in the first paragraph. Before the second paragraph I added the commands *.ol 10* (left margin = 10) and *.or 75* (right margin = 75) to set it up for elite. Once these margins go into effect via the dot commands, they remain in effect until changed. Therefore, just before the third paragraph, which is in pica, I've added *.ol 8* and *.or 64* to return to the default margins.

The results? Not necessarily pretty, but certainly instructive.

The *Map* shows the second paragraph much wider. *Write ROM* switched to 65 characters per line for the second paragraph and back to 56 per line for the third, so the margins in the dot commands did indeed take effect.

But now the second paragraph is shifted to the right relative to the others. Though well centered on the page, which looks good in a document printed in elite, it doesn't quite give us the desired effect. Let's try something else.

In Figure 3 I made several changes, the most important one still being the margins for the second paragraph. I've adjusted the left margin to 12 to indent the paragraph a little more. Notice that I did not specify a new right margin. Since I didn't change that one, it remains at the default of 64, which just happens to work out nicely, indenting the right side of the paragraph roughly the same amount as the left. The printed paragraph is now nicely set off, leaving little doubt that it's somehow "special." Having discovered the necessary settings it's now easy to duplicate the process whenever needed. (Be sure to write down what works best for you, for future reference.)

Note once again, however, that the paragraph doesn't look on the *Map* the way it does on the printout. WYSANWYG—especially when you start getting fancy!

```
Dear Fred,◂
◂
The answer to your needs will be found
in your ;Write ROM; manual in the
section on DOT COMMANDS, page 59:◂
◂
.ol 10◂
.or 75◂
é;This device, called "dot commands," is
 a series of simple codes embedded by
you in the article you are writing.
These dot commands take over and change
the margins, center or justify and make
other changes on the next piece of text
that follows until you embed other
commands that change it back to the same
 settings as the function keys or some
other way you want it.;é◂
◂
.ol 8◂
.or 64◂
By experimenting with dot commands,
Fred, you'll gain much greater control
over the appearance of your documents.◂
◂
```

```
MARGS.DO

Page 1


 Write ROM
©PCSG 1985
```

Dear Fred,

The answer to your needs will be found in your *Write ROM* manual in the section on DOT COMMANDS, page 59:

*This device, called "dot commands," is a series of simple codes embedded by you in the article you are writing. These dot commands take over and change the margins, center or justify and make other changes on the next piece of text that follows until you embed other commands that change it back to the same settings as the function keys or some other way you want it.*

By experimenting with dot commands, Fred, you'll gain much greater control over the appearance of your documents.

*Figure 2. Sample file with dot commands added to adjust margins for section of text containing elite font.*

# 2001DataDream

## The UltraLight Notebook

## Power and Portability Redefined

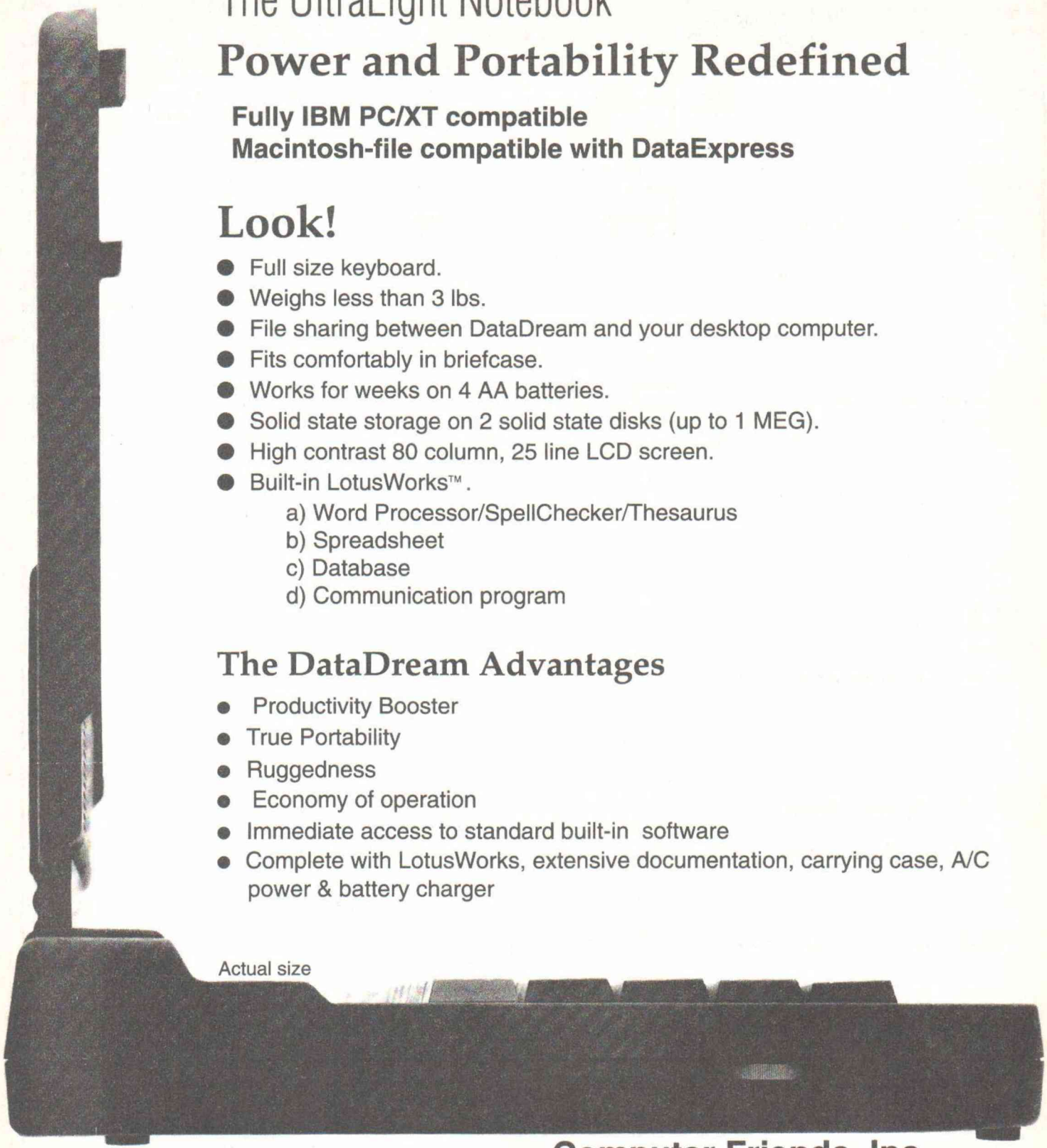
**Fully IBM PC/XT compatible**
**Macintosh-file compatible with DataExpress**

## Look!

- Full size keyboard.
- Weighs less than 3 lbs.
- File sharing between DataDream and your desktop computer.
- Fits comfortably in briefcase.
- Works for weeks on 4 AA batteries.
- Solid state storage on 2 solid state disks (up to 1 MEG).
- High contrast 80 column, 25 line LCD screen.
- Built-in LotusWorks™.
    a) Word Processor/SpellChecker/Thesaurus
    b) Spreadsheet
    c) Database
    d) Communication program

## The DataDream Advantages

- Productivity Booster
- True Portability
- Ruggedness
- Economy of operation
- Immediate access to standard built-in software
- Complete with LotusWorks, extensive documentation, carrying case, A/C power & battery charger



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# Features of Data Dream

**Portability**. At 2.9 lbs. and with a size of 11.8" x 7.6" x 1.6", DataDream is a winner in portability. Yet, you still have the luxury of a full size keyboard for fast and accurate typing, and a full screen!

**Ruggedness**. Store your data, letters, reports, spreadsheets on one or two solid state disks. No moving parts means faster operation, no noise and less chance of failure. DataDream can be used anywhere and in any application, in the silent comfort of an easy chair or in the field to collect data at an industrial site.

**High Contrast LCD Display.** 80 column, 25 lines, for efficient writing, database and spreadsheet handling. No need to repaginate to see what you've written.

**Economy of Operation**. DataDream uses four standard AA batteries or four AA rechargeable batteries. They are the most commonly available batteries worldwide (and the cheapest).

**Interface**. DataDream gives you the best of both worlds, power in the field and easy connection to a variety of peripherals and systems: One serial port for adding a mouse, modem or network adapter; One parallel port for connection to a Printer or to a Floppy Disk or to a Hard Disk; One RGB port output for connection to an external monitor (CGA); One port for direct connection to a TV set (B/W or color). Use the TV as a display screen or to play computer games! Work on your proposal in the car or on the plane and use the Printer port for output to virtually any printer!

**Solid State Storage**. DataDream uses the standard JEIDA V4.0 / PCM V1.1 solid state cards, now available in 512k size and projected for 1 MEG memory and above in the near future.

**Built-in system software and applications**.
DataDream uses DR DOS 5.0 by Digital Research. The system is stored in ROM and so is LotusWorks. This means IMMEDIATE access to a range of applications and options, faster than on your desktop or Macintosh.

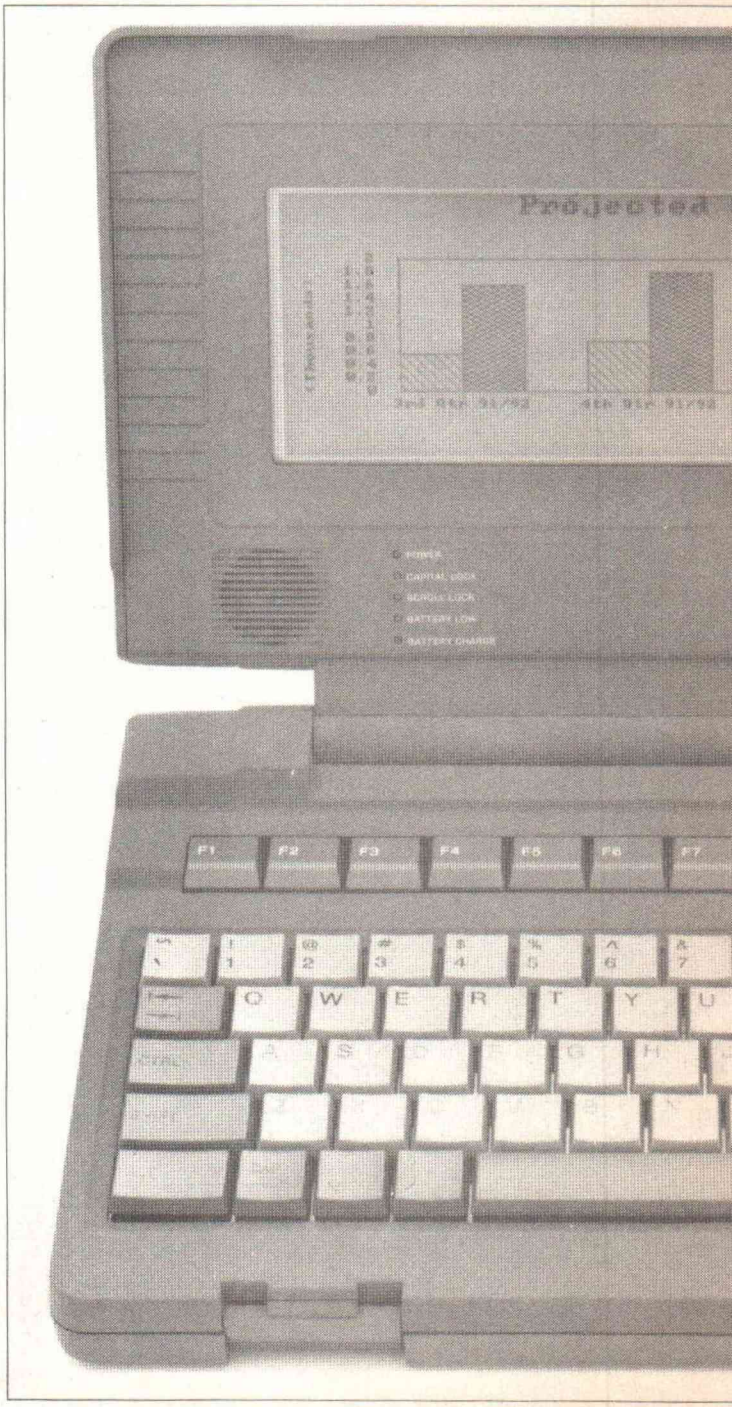
**Built-In LotusWorks.**
LotusWorks is an integrated package of software applications, including a Word Processor complete with Spell Checker and Thesaurus, a Database, a Spreadsheet (complete with graphics) and a Communications Program. Access to any of the programs is intuitive and available at the push of one button.
LotusWorks has built-in features that make it compatible with many other programs. The database uses the same files

## A Few Words for Mac Users

**DataExpress** is the DataDream's Macintosh connection. DataExpress is an extremely easy to use software program which installs on the Macintosh (Plus, SE or II) and on DataDream.

DataDream is connected to the Mac via the serial port (cable supplied). Upon loading **DataExpress**, the Macintosh takes control of DataDream. Read the DataExpress directory on the Macintosh screen and simply select the files that you wish to transfer from DataDream to the Mac. Word Processor files become Microsoft Word files. Spreadsheet files become Mac documents that can be opened in Microsoft Excel or WingZ. DataBase file transfer is also supported. Equally, files from the Macintosh can be downloaded to the DataDream, letters, spreadsheets, appointment books etc.

With **DataExpress**, DataDream becomes an efficient, lightweight, powerful and cost-effective, truly portable Mac.



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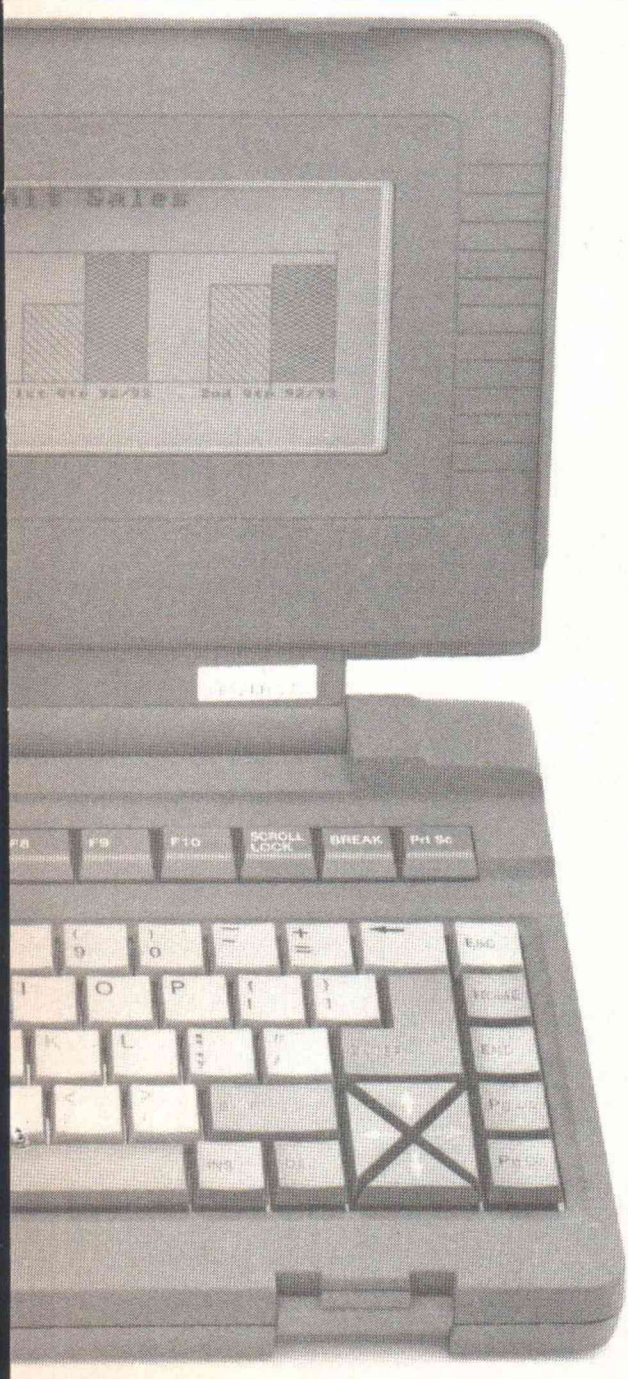
## A Few Words for PC Users

**File Link** is the DataDream's MS-DOS desktop computer connection. File Link is software program which includes a utility for transferring the File Link software to your PC automatically.

DataDream is connected to the PC via the serial port (cable supplied). Upon loading **File Link**, the PC takes control of DataDream. You can transfer all types of files and programs, quickly and efficiently.

With **File Link**, DataDream becomes an efficient, lightweight, powerful and cost-effective, truly portable computer.




as dBASE III Plus. The spreadsheet uses the same files as Lotus 1-2-3. LotusWorks creates standard ASCII files that can be read by most other word processing programs.

**Word Processing**
- Create professional looking documents.
- Multiple fonts resident in program.
- Cut & Paste tables and graphs.
- A 100,000+ word dictionary for spell checking and synonym finding.
- Use mail merge function to create personalized letters and address labels.
- Insert footnotes.

**Spreadsheet and Graphics**
- Analyze numbers, manage finances and calculate formulas.
- Choose from a variety of chart types, including pie, bar, line, X/Y and stacked.

**Database**
- Store & sort thousands of records by name, number or other criteria.
- Customize business forms in suitable styles and formats.
- Download or upload information from other databases for your field activity.

**Communication**
- Log-on automatically to on-line services.
- Transfer information to and from other computers.

### Pardon us, Dr. Johnson

In 1762, Dr. Samuel Johnson published his famous *Dictionary of the English Language*. He defined 'portable' as '*such as may be born along with one, such as is tranfported from one place to another*'. The definition is accurate in general, but has been inadequate for portable computers. It is true that you can place a laptop on your lap and transport the unit more easily than a desktop. But try to carry 12-14 lbs. of laptop computer in one hand (including the battery recharger) and 14 lbs. of briefcase in the other. Then, board a full plane and find a place for "storing hand-carried items underneath the seat or in the overhead compartment . . . ." Suddenly you realize that what you really need is smaller size and lighter weight while retaining computing power.

We did not find a word to describe a computer with these ideal, truly ***portable*** characteristics, so, pardon us, Dr. Johnson—we called it ***DataDream***.

# Specifications

| | |
|---|---|
| **Operating System** | DR DOS 5.0 |
| **Internal Memory** | |
| RAM | 640 K DRAM |
| Internal RAM disk | |
| Solid State Drives | 2 |
| **Screen** | |
| Size | 640 x 200 pixels |
| Type | F-STN LCD<br>Black & White |
| **Built-in Software** | WordProcessor<br>Spreadsheet<br>Database<br>Communications<br>Alarm Clock<br>Terminal emulation<br>File Link |
| **Hardware** | |
| Processor | F8680 |
| Clock Speed | 8 MHz |
| Keyboard | 80 |
| **Sockets** | Serial, Parallel, A.C. Adaptor,<br>RGB (CGA), IC card (2),<br>Composite video/audio out |
| **Power** | |
| AC adapter | 9v/300mA |
| Batteries | 4 AA alkaline/15-30 hrs. |
| Rechargeable battery | Via DC jack/5-7 hrs. |
| **Dimensions** | 11.8"x7.6"x1.6"<br>300x194x39.5 mm |
| **Weight** | 2.9 lbs, 1.3Kg |
| **Carrying case** | included |

## Options

| | |
|---|---|
| External Solid State Disk | 128K/card, 256/card,<br>512/card |
| Cable for PC link | 3' for 9-pin fem, 25-pin male |
| External Hard Disks | Interface through parallel<br>port 20M/40M<br>AXONIX/LEXEL compatible |
| Mouse | LogiTech C7 mouse |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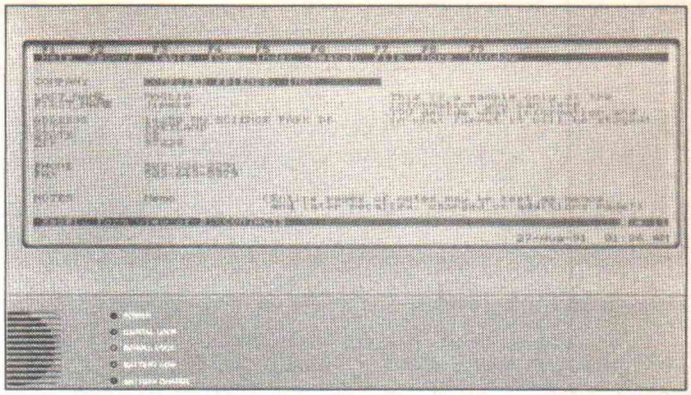
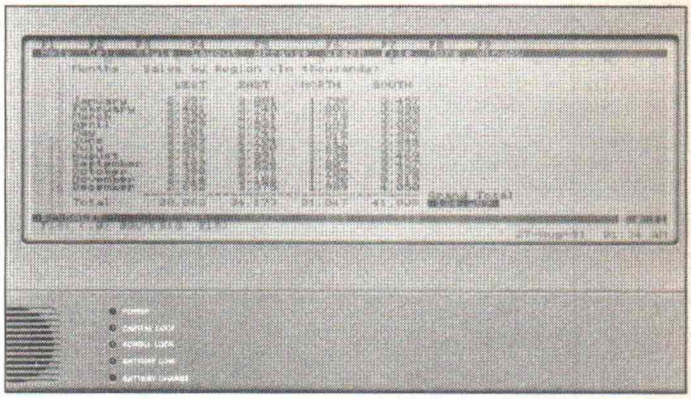
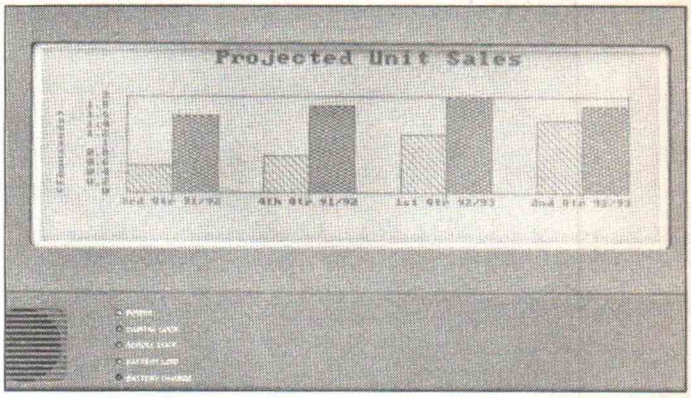


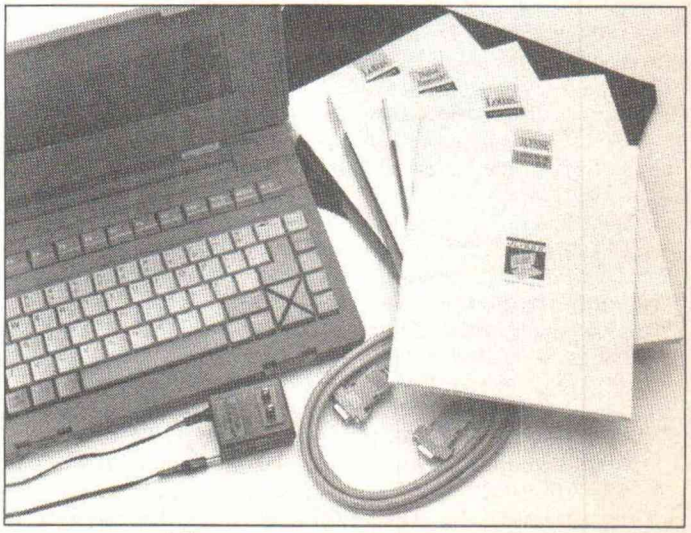
**DataDream screen showing the database program.**



**DataDream spreadsheet screen.**




**DataDream's spreadsheet with graphics.**



**All accessories are included.**

### A BIT OF TOUCH-UP WORK

Now let's examine the other changes I made in Figure 3. First, I directly specified the default margins (*.ol 8* and *.or 64*) at the top of the file. While not completely necessary, it serves to start me off on the right foot and acts as a reminder of where I'm starting.

In Figures 1 and 2, I added an extra line between paragraphs by pressing *ENTER* an extra time. The *.ox on* command near the top of Figure 3 automatically adds the extra line after each paragraph, so I removed the ones I had put in manually.

As mentioned, the *.ol 12* command adjusts the left margin for the elite type in the second paragraph. (The default right margin of 64 remains unchanged.)

The *.oj on* command enables justification. That is, extra spaces are added between words where necessary, to make the right margin come out even. This further enhances the "special" effect in the second paragraph, making it stand out more.

**While not completely necessary, it serves to start me off on the right foot**

The *.ol 8* after the second paragraph resets the left margin to the default value (8) in preparation for the pica font of the third paragraph. (Remember, the right margin of 64 has remained unchanged.)

The *.oj off* cancels justification, returning to the "ragged right" format of the main body text.

And finally, *.ox off* cancels the extra line after a paragraph. (Technically, you should put this command at the beginning of the document's last paragraph, but I screwed up and didn't notice it until after I printed all the figures. Wasn't about to redo 'em all. No way. Phooey!)

### D-D-D-DOT'S ALL, FOLKS!

Now, if you've played around with the excercises above, you've already begun to master the dot commands. (You might say you've become one of *Write ROM*'s "elite" users!) Continue to experiment with other dot commands (page numbering, headers, footers, conditional page feed, etc.), remembering to compare *Map* views and actual printouts to develop a feel for the WYSANWYG Factor.

Also, continue to set up your personal *PRINT Code* settings, like emphasized, double strike, underline, etc., matching them to your particular printer. While I've used an Epson-compatible printer in the examples so far, the same principles apply to IBM-compatible printers; the codes are just different sometimes. The *Write ROM* manual section on *PRINTER FEATURES* (p. 79) and your printer manual will give you the tools you need.

Next month we'll play with the *.in xxxxxx* dot command, which lets you include other files within your document at printing time. Among the many other uses for this command, I use it to automatically produce the "tmne" letterhead pictured in last month's column, Figure 1. (There are other ways to produce a letterhead, too, as we'll see, space permitting.)

Dot's it for this month. Catch ya!

*Erratum: Figure 1 in last month's column suffered somewhat in the printing process. While the "tmne" in the letterhead didn't reproduce well in the magazine, rest assured, it's actually quite sharply defined on the actual printout.*

```
.ol 8
.or 64
.ox on
Dear Fred,
The answer to your needs will be found
in your ;Write ROM; manual in the
section on DOT COMMANDS, page 59:
.ol 12
.oj on
ë;This device, called "dot commands," is
 a series of simple codes embedded by
you in the article you are writing.
These dot commands take over and change
the margins, center or justify and make
other changes on the next piece of text
that follows until you embed other
commands that change it back to the same
 settings as the function keys or some
other way you want it.;ë
.ol 8
.oj off
By experimenting with dot commands,
Fred, you'll gain much greater control
over the appearance of your documents.
.ox off
←
```

```
ALLDOT.DO

Page 1


 Write ROM
©PCSG 1985
```

Dear Fred,

The answer to your needs will be found in your *Write ROM* manual in the section on DOT COMMANDS, page 59:

> *This device, called "dot commands," is a series of simple codes embedded by you in the article you are writing. These dot commands take over and change the margins, center or justify and make other changes on the next piece of text that follows until you embed other commands that change it back to the same settings as the function keys or some other way you want it.*

By experimenting with dot commands, Fred, you'll gain much greater control over the appearance of your documents.

*Figure 3. Sample file with more pleasing margins for elite section, plus added dot commands for justification and extra line after paragraph.*

**COMPATIBILITY:** Tandy 100, 102, 200, NEC 8201/8300, Kyocera KC-85, Olivetti M10

# *Lucid* Leaves Competition in the Dust

## *An introduction to* Super ROM, *part two.*

*by Gene Wilburn*

Last month I began a discussion of *Super ROM*—one of the popular add-in ROM chips that can transform a Model T from a nice, but plain-vanilla, notebook portable to a supercharged miniature computing environment that does everything except butter the toast. I looked at two of the *Super ROM* modules, *Write ROM* and *Thought*. This month let's kick into high gear with a look at one of the Model T industry's most amazing products: the *Lucid* spreadsheet.

### SPREADSHEETS

Electronic spreadsheet programs rank second—right behind word processors—as the most popular office software. The original electronic spreadsheet was called *VisiCalc* (for *visible calculator*) and was available for early models of Apple, TRS-80, and Commodore computers. A rival program, *SuperCalc*, was developed for CP/M machines.

When the IBM PC came along, *VisiCalc* and *SuperCalc* were both ported to that environment, where they were joined by yet another spreadsheet contender, *MultiPlan*, from Microsoft. All this is history because they were all quickly and totally blown out of the water by a much better product with the odd name *Lotus 1-2-3*. *Lotus 1-2-3* became the standard by which every other spreadsheet was measured. This is still true today.

So what does any of this have to do with Model T's? As it turns out, quite a lot.

When the original Model 100 hit the streets in 1983, spreadsheets were in the air, and many users, especially business users, wanted a spreadsheet program to run on their new portable. Microsoft ported a ROM-based version of *MultiPlan* to the Model T. *MultiPlan ROM* was (and still is) an early-generation spreadsheet program with a lot of rough edges and a particularly unpleasant grid that uses numbers for both columns and rows, rather than the alpha for columns, followed by row number (e.g., *A23*) that all other spreadsheet models use.

### HI-YO SILVER!

Enter the folks from PCSG (Portable Computer Support Group). Rather than porting an existing spreadsheet to the Model 100, they designed a new one from the ground up. It was released in 1984, and astonishingly it not only ran well in the Model T; it was actually a better spreadsheet product than the IBM PC-based *Lotus 1-2-3* release 1A. They named their product *Lucid*.

**_Lucid_ offered a feature that didn't make it to _Lotus 1-2-3_ until release 2.2, six years later.**

*Lucid* introduced an important design feature that didn't make it into Lotus products until a much later date: *sparse matrix memory management*. This means that if a spreadsheet cell does not contain a value, it takes up no bytes in memory. This was revolutionary. All the others, including *Lotus 1-2-3*, wasted memory with abandon. In a Model T, memory squeezing is a way of life, and *Lucid* made large spreadsheets possible in a very small memory resource.

*Lucid* also offered cell labels (text) that automatically spilled over to the next cell if the label was longer than the cell width and the next cell was empty. All modern PC and Mac spreadsheet programs now do this as a matter of course, but try typing a long label into an old spreadsheet program and see what happens. It gets truncated.

And *Lucid* also offered a feature that didn't make it to *Lotus 1-2-3* until release 2.2, six years later—*linked spreadsheets*—the ability of one spreadsheet to reference cells in another. That's *years*, not *months*.

What I'm pointing out is that *Lucid* wasn't just another spreadsheet. It was a sizzler—ahead of its time. And because of that, it still feels good, even to users of current-generation PC and Mac spreadsheet programs.

It doesn't feel like something from the past, like the *Multiplan ROM*. In a sense, you could say that *Lotus 1-2-3* has finally caught up to the features of *Lucid*. What this means for Model T owners is that they can run a spreadsheet program that has similar features to the best PC character-based spreadsheets. Kudos to those early designers who produced a product that has stood up so well to the test of time!

### FEATURES

For starters, a *Lucid* spreadsheet can occupy a maximum grid of 254 rows by 126 columns. How much you can actually place in a spreadsheet is constrained by how much of your Model T's memory is free and what goes into the actual cells. In relative terms, you can create some respectable spreadsheets.

Cursor movement through a *Lucid* spreadsheet is logical and straightforward. The menu structure is similar to that of the other *Super ROM* products. If you are already familiar with a Lotus-compatible spreadsheet, you'll feel right at home.

One particularly nice feature of *Lucid* is that it overlaps columns when you scroll a screen to the right or left. For example, if the last visible column on the right is column *M*, column *M* becomes the first column on the left when you scroll one screen to the right. This cell overlap is very helpful when moving around a large spreadsheet with the Model T's small window.

Unlike older spreadsheet programs, such as *VisiCalc* and *MultiPlan*, *Lucid* allows you to change individual column widths. In the older programs, if you change column width to, say, 12, every column is changed to 12.

*Lucid* offers a *go-to* feature that lets you specify a cell. It does not have Lotus-style "named ranges," but it can search for text, so you could insert labels to act as pseudonames at range boundaries.

Label formatting and cell formatting are similar to *Lotus*. You can center, left justify, or right justify text using the familiar ^, ', and " symbols. You are given a broad set of choices for formatting numbers.

As with *Lotus* you can protect and unprotect ranges of cells. This is an important feature when you create spreadsheets as data entry modules for use by other people. It prevents them from accidentally erasing or changing cells.

One of the chief reasons for using spreadsheet programs is that they allow you to create formulas. You can sum up columns and use the figure to divide by the sum of other columns—that sort of thing. *Lucid* provides a rich set of functions to serve as the building blocks for formula creation. The functions include *SUM, MAX, MIN, REF, CNT, TBL, INT, RND, SQR, LOG, EXP, COS, SIN, TAN, ATN, ABS,* and *SGN*. The manual provides clear information on how to combine these functions into commonly used business formulas, including *PMT, PV, FV, TERM, NPV,* and *IRR*. While these are not pre-rolled functions, as they are in *Lotus 1-2-3*, they are easy to construct when needed.

If formulas such as *IRR* (internal rate of return) have less appeal to you than day-old porridge, don't despair. *Lucid* is useful for more than business or science formulas. Its *TBL* (table lookup) function is the best I've ever seen in a spreadsheet.

**_Lucid_ is useful for more than business or science formulas.**

Effective spreadsheet formula writing requires an easy way to replicate cells containing formulas, plus a way of specifying absolute and relative addressing within the formulas. *Lucid* provides both, and uses the same conventions for relative and absolute addressing that *Lotus* uses.

As with the other *Super ROM* modules, printing from *Lucid* is redirectable to printer, serial port, and to file. Special print codes can be inserted into text labels in cells.

Earlier I alluded to *Lucid*'s ability to link spreadsheets. This is done through the *REF* function. This allows you to import the value of a cell from another spreadsheet file into the calculation of the current one. This in turn allows you to work in modules, keeping individual spreadsheets smaller and more focused.

## OVERALL IMPRESSIONS

I can only say I'm astonished to find a spreadsheet of such high quality available for the Model T. This summary of *Lucid*'s features only begins to hint at its capabilities. Spreadsheet programs are like computer languages—they're open ended. If they provide you with good basic tools, your imagination is your only limitation. *Lucid* has the ability to take you to where you want to go.

Despite its Model T base, *Lucid* is enough spreadsheet to run a parttime or hobby business. The manual, which is well written, includes sample spreadsheets for applications like P&L (profit and loss) calculations. Its database capabilities, as you shall see later, even allow you to do database functions like keep customer lists on file.

Memory is, of course, the limiting factor in the Model T world. You can work around this by using a Portable Disk Drive to move files in and out of Model T memory, as they're needed. Heck, with used Model T's selling for a song, you could just keep more than one Model T loaded with your business files and still come out with a cheaper and

```
Rec:[#   ]
Ln: [a#                ]  Fn:[b#                ]
Co: [c#                                         ]
Ad1:[d#                                         ]
Ad2:[e#                                         ]
Ci: [f#            ] St:[g#    ] Zip:[h#    ]
Bph:[i#          ]  Hph:[j#    ] Fax:[k#    ]
```

**Figure 1 caption.** *Figure 1. An example of how a screen might look using the* Super ROM *spreadsheet* Lucid *as a database.*

easier-to-use system than an MS-DOS system.

## DATABASE

The *Super ROM* suite of programs does not offer a true, standalone database module, but it offers a clever window into *Lucid* that is accessed through the menu item *Lucid Data*. Given that databases and spreadsheets both store their information in two-dimensional tables, they are structurally alike, and spreadsheets make quite respectable database tables.

The database module consists of one or multiple windows into a *Lucid* spreadsheet. You design a screen in *TEXT* (up to seven lines per screen view) placing labels and data fields in their appropriate spots. A screen design might look like Figure 1.

Each database record is stored in a *Lucid* table as a row. Each field is stored as a column. In the screen template—an ordinary *.DO* file—a pound symbol (#) by itself displays the record number (row number). The letters preceding the pound symbol represent *Lucid* columns.

```
Edit Dupe Prev Next Vwpt Text Lucd Exit
  1    2    3    4    5    6    7    8
```

*Figure 2. The data entry screen's function keys.*

Once the screen is designed, the fun begins. The screen now becomes a data entry screen with a menu at the bottom that maps out the Model T function keys (see Figure 2). An inverse-video cursor appears in the first data field, ready for input. Pressing *ENTER* twice, *TAB*, or a cursor key moves to the next field. The *F3 Prev* and *F4 Next* function keys move between records.

As in *Lucid* itself, the *F1 Edit* function key allows editing on a field without having to type it over. As Nuge pointed out in the October 1991 SUPER HERO column, *Lucid* is capable of storing a text file in a cell. You can enter a *.DO* file name in any of the screen fields and the *F6 (Text)* toggles you into that file.

You can create multiple windows into a data table by inserting *CODE-0*, the paragraph symbol, into the screen design. Each paragraph symbol marks the start of a different window, or view. The *F5 Vwpt* function key shuffles between multiple views.

Not bad for a spreadsheet. As with *Lucid* itself, the *Database* module is fast.

What's even more impressive is that the *Database* module permits you to do *joins* on tables, permitting true relational database functions. This sophisticated feature reduces redundancy and keeps data tables smaller.

And, as you would expect, *Super ROM* supplies a couple of methods to allow you to merge your *Lucid* data into *Write ROM* documents, or to print them directly from *Lucid*.

## SUMMING UP

It's good that *Portable 100* has started a monthly column on the use of *Super ROM*. There is more to this nimble, fluid, and versatile ROM than I could do justice to in this brief overview.

For anyone with spreadsheet needs, *Super ROM* stands in a class by itself. Its well-engineered modules impart impressive capabilities to the Model T.

However, *Super ROM* is not the only ROM in town. Next month we'll begin a look at its fine competitor, *Ultimate ROM II*. Stay tuned.

***The* Database *module permits you to do* joins *on tables, permitting true relational database functions.***

*You can communicate with Gene via CompuServe (his ID is 72435,732), through regular mail in care of* Portable 100, *or direct at 91 Inglewood Drive, Mississauga, Ontario, Canada L5G 1X9. Please add sufficient postage if you mail to Canada and an international reply coupon when requesting a reply.*

**COMPATIBILITY:** Model 100, 102, and 200 (sometimes others, with changes).

# The Move to DOS

*Make your life easier with a little common sense.*

by *Paul Globman*

Until recently, all of my computing tasks were adequately performed by a Tandy 200. This is no ordinary Tandy 200, as it has a 512K Node Datapac and a Traveling Software 8 ROMpak (a.k.a. PG Design SAFE). The SAFE contained the four-ROM set of *T-Word* with *Sardine* (by Traveling Software), plus a Polar Engineering *ROM2/Cleuseau*, a PCSG *Super ROM*, a Traveling Software *TS-DOS* ROM, and an EME ExtRAM. The computing power of my Tandy 200 is quite respectable, but earlier this year I was lured into the world of MS-DOS by the dropping prices of DOS notebook computers.

Prior to working with the Tandy 100/200's, I was fairly acquainted with CP/M, so the move to MS-DOS was not traumatic. MS-DOS took its roots from CP/M and I have a good frame of reference, so I got a book on MS-DOS function calls and batch file programming, and started reading.

Now, when a problem comes up, as a novice I am unaware of all the programs available to correct the situation. So I just apply my limited knowledge and resolve the problem the best I can. Here are a couple of examples.

## OOPS!

Have you ever gone through your directories deleting unwanted files, only to realize you've just deleted the wrong file by mistake? Even if you can recover that file, you know it's a hassle, not to mention that moment of intense depression. And if you can't recover the deleted file, the depression lasts a lot longer than a moment!

Spare yourself that agony and stop deleting files. Instead of DELETING the files, DUMP them! After deleting the wrong file once, I began using this technique.

First, create a GARBAGE directory (*MD C:\GARBAGE*). Second, create *DUMP.BAT*:

```
IF '%1'==''  GOTO DONE
COPY %1 C:\GARBAGE > NUL
FOR %%A IN (%1) DO DEL %%A
:DONE
```

Third, add this line to your *AUTOEXEC.BAT* file:

```
FOR %%A IN (GARBAGE\*.*) DO DEL %%A
```

*DUMP.BAT* is simply a *MOVE* command, to a specific directory. Put *DUMP.BAT* in your path, and from now on instead of deleting files, *DUMP* them. Use the same command structure as the *DEL* command except use *DUMP*. The files will automatically be purged from your disk the next time you boot up, so for all intents and purposes, you may consider the files deleted. BUT, if you happen to dump the wrong file (and realize it before you power down), you can easily retrieve the file from the GARBAGE directory.

And if you wish to avoid the deletion of *C:\GARBAGE*.**, just boot from a floppy that doesn't include the delete command in the *AUTOEXEC.BAT* file.

If you use a mouse compatible DOS shell (like *WINDOWS*) that lets you to point-click-drag a file from its current directory to */GARBAGE*, then *DUMP.BAT* is not needed to move the files. You still will want the actual deletion to take place with the next reboot, so include the addition to your *AUTOEXEC.BAT*. With the use of this deletion technique, you can avoid the misery that accompanies the blunder of deleting an important file.

## OH, THAT REMINDS ME ...

No doubt, myriad programs let you save memos and display them when needed, but this little batch file takes up very little room on disk and it's free.

```
@ECHO OFF
ECHO Enter memo... then press F6 and ENTER
ECHO ————————————————
COPY CON TMP >NUL
TYPE TMP >> C:\MEMO.TXT
DEL TMP
```

Once you've created *MEMO.BAT*, put it in a directory in your PATH. Now you can type memos by executing the *MEMO* command, typing your memo, and pressing *F6* when done. Your memos will be appended to the file *C:\MEMO.TXT*, and you can see them anytime with *TYPE MEMO.TXT*.

I like my memos automatically displayed whenever I turn on the computer, so I put the this into my *AUTOEXEC.BAT* file:

```
@ECHO OFF
IF NOT EXIST MEMO.TXT GOTO NO_MEMO
CLS
ECHO CURRENT MEMOS
ECHO ————————————
TYPE MEMO.TXT
ECHO ————————————
PAUSE
:NO_MEMO
```

Now each time I boot my system, if *MEMO.TXT* exists, it is displayed for me. It's quick, easy, inexpensive, useful, etc. But it still doesn't make me like that dreaded memo:

```
"DENTIST—MONDAY @ 11:15 am"
```

## TO SUM UP

Even though I can continue to get my work done with my Tandy 200, the DOS notebook does keep me compatible with most of my associates, and the internal 2400-baud modem reduces my online CompuServe time and charges. So as I continue to use both notebook computers, my contributions to this magazine will not be restricted to just Model 100 or Tandy 200 topics.

*Paul can be reached by modem on CompuServe (72227,1661) and GEnie (P.GLOBMAN), or by mail at 9406 N.W. 48th St., Sunrise, FL 33351 (please enclose SASE if you're requesting a reply).*

# DEFUSR appears monthly to answer your questions about Tandy notebook computers.

*Send your queries to: DEFUSR, PORTABLE 100, P.O. Box 428, Peterborough, NH 03458-0428. Please enclose a stamped, self-addressed envelope for our reply.*

**LCD'S AND DISK DRIVES**

I had just written to you when the issue arrived containing my earlier letter with some very useful answers. Thanks!

For about a month, the LCD on my Model 100 has worked fine, so I assume it was some environmental condition that was causing the problem. It may have been the heat, as you think, but at no time have I used it in direct sunlight or outside the house in the tropical heat.

Your proposal to change the disk drive on the Model 600 is easier said than done. The technician to do it is available in Dakar, but the new disk drive is not. I had a recent problem with the disk drive on my Tandy 1000HX. It could not be repaired locally and a new one was not available. So I sent the drive back to the States with a computer-illiterate friend. I had estimated about $75 to replace it if it could not be repaired. She went to Radio Shack and they said $129 for a new drive. I had no choice but to pay because neither she nor I knew where to comparison shop. If you know the names of a couple of parts suppliers, I would like their names. I receive catalogues from Inmac, Global, Dartek, etc., but they do not carry everything (like disk drives and DMP print heads).

I need some help. My Model T recently went cold turkey on me. I did not know how to recover my files after the cold start, and so have lost both the program to pull *FLOPPY.CO* out of the Tandy Portable Disk Drive One utility disk and the *DISKGO.??* program to stop the *IS/ROM* from interfering. I do not seem to have them hanging around my files, either. Virtually the only operating instruction booklet I cannot find is that for the TPDD-1. Can you help me?

Now to the Model 600. Do you know any user groups? You mention somewhere that it was driven by *CP/M*. Does that mean that its compatibility with PC's should be governed by programs for transferring files from *CP/M* to a PC? Or does it have its particularities like so many Tandy computers? I have tried to read Model 600 disks on my 1000 HX, but without success. Is there any equivalent to *LAPDOS* to connect the Model 600 directly to a PC?

**Robert Palmeri**
**Washington, DC**

**Your best bet is to have a friend pick you up a copy of Computer Shopper.**

*While it is possible to find replacement drives cheaper than what you actually spent, dealing with the mail order firms and paying export shipping charges would push the price up to about what you paid, anyway. If you really look hard, you can find drives for about $75, as you estimated, but just walking into any computer store and asking for a drive does not get you that cheap price.*

*Your best bet is to have a friend pick you up a copy of* Computer Shopper. *This 700+ page tabloid-sized monster has practically every parts dealer in the US listed, some of whom will ship outside the US. It's available at almost all the magazine stands that carry* PC Magazine *and* PC WORLD.

*Recovering from a cold start is simple, type:* OPEN "TEMP.DO" FOR OUTPUT AS #1: FOR X = A TO MAXRAM: PRINT#1, CHR$(PEEK(X));:NEXT:BEEP, *where A = 32768 for the 32K Model 100/102 and A = 40960 for the Model 200 or 24K Model 100/102.*

*The program for loading* FLOPPY.CO *is also easy:*

```
10 OPEN "COM:88N1DNN" FOR OUTPUT AS #1
20 PRINT#1, "S10985157C00AD7EF0B3AS901FE"
30 LOAD "COM:88N1ENN",R
```

*Type this in and save it as* IPL.BA. *Before you try to run it, though, turn your TPDD-1 upside down and remove the little cover on the bottom that is opposite the battery compartment. Inside are four little slide switches in a DIP bank. Set them all to ON. Make sure you turn the drive off and back on after doing this, or the drive will ignore the new switch settings.*

*Now run the* IPL.BA *program. The drive should click and spin up, and a moment later your display should say "—INITIAL PROGRAM LOADER— WAIT A MINUTE!" After a couple more moments, the display will change to that of the regular menu, and* FLOPPY.CO *will be listed. That should do the job.*

*To use the drive, change the DIP switch settings back to OFF and turn the disk drive off and back on to register the change internally.*

*The problem regarding your* IS/ROM *program is something I can't help you with. I have heard of this program, but never used it. Can any of our readers help us out here?*

*Now for the Model 600. What I said was that the Model 600 came out when the only portable computers (battery-operated) were the CP/M machines. The Tandy 600 is not a*

*CP/M machine. Its operating system is based on* Microsoft Works, *not CP/M nor MS-DOS. There are no programs for automatically transferring files, like* LAPDOS *does. Your only choice is to use the built-in* XMODEM *program.*

*The Tandy 600 disk drive formats disks as single-sided 360K disks. If you want to read files created by the 600 on your* MS-DOS *machine, you need to format the disk (as 360K single-side) in your* MS-DOS *machine before storing files on it. You may have to fiddle with the number of sectors per track to get the right number for a perfect match.*

*-tk*

### TANDY 200 POKES

I'm wondering if you can help with a Model 100 program conversion to a Tandy 200. The program works fine except for these two statements: *540 IF PEEK (A-511) = 234 THEN GOSUB 320* and *940 IF PEEK (C(N)-512) = 32 THEN TT=TT+1*. Unfortunately, these two statements are vital to the program's operation. Without knowing the correct address on my Tandy 200, the score is zilch.

**Ray Glaser**
**Cleveland, OH**

*Sorry, but without more information (such as what the program does and what these two statements are supposed to do in the program, I can't help you at all. Given the infinite number of possible programs, trying to decipher what these two statements accomplish is impossible.*

*-tk*

**The Portfolio is designed to exchange files with a PC, but I need to exchange files with my Model 100**

### ATARI PORTFOLIO/MODEL 100 CONNECTION

I have used my Model 100 daily for heavy correspondence since Radio Shack chopped the introductory price to fit my budget. It is fun to use, simple to operate, its readiness makes it an ideal computer for producing text under 5,000 words, and *Ultimate ROM II* gets everything out of my printer. I don't expect to find another computer nearly so practical. But it is portable only in a briefcase; it is not ready as a notebook to use at odd moments away from my desk. The Atari Portfolio promises to fill an empty niche in my schedule as a pocket computer I can carry everywhere all the time to jot my correspondence while traveling, waiting on appointments, and in coffee shops where office machinery is not acceptable as a counter setting.

But no dog is perfect; besides the tedious and tiddly operation, the Portfolio suffers from a printing and formatting program only slightly better than the Model 100 *TEXT* program. The Portfolio is designed to exchange files with a PC, but I need to exchange files with my Model 100 for formatting and printing.

I have diagrams for the serial connections to both machines, but the wiring is not the same at both ends of the cables. I have no experience with tiddly soldering, nor how the RTS, CTS, DSR, DTR pins relate to each other, either. Plus, the ribbon cable with crimped terminals doesn't look like a quick fix. I took it to the dealer technician, prepared to pay $50 for a cable. I was flabbergasted to find that the technician could not read the pin diagrams! Can you help me? I've included the pin-out designations for both machines. Could you draw the lines to show where they belong?

**T.B. Pawels**
**Victoria, BC**

*It's not nearly as hard as you think. Here's one way to remember the connections: CTS and RTS both end in TS, they go to their opposites (CTS to RTS); the DTR and DSR both start with D, similarly, they go to their opposites! For a better idea of what I mean, see Figure 1.*

| Portfolio | | | Model 100 | |
|---|---|---|---|---|
| CD 1 | NC | 1 | GND | Ground |
| RD 2 | <— | 2 | TD | Transmit Data |
| TD 3 | —> | 3 | RD | Receive Data |
| DTR 4 | <— | 6 | DSR | Data Set Ready |
| DSR 6 | —> | 20 | DTR | Data Terminal Ready |
| RTS 7 | <— | 5 | CTS | Clear to Send |
| CTS 8 | —> | 4 | RTS | Request to Send |
| GND5 | NC | | | |
| RI 9 | NC | | | |

*Figure 1. RS-232 pin-outs for the Atari Portfolio and the Model 100. CD stands for Carrier Detect, for modem work, and RI stands for Ring, so the modem can tell the computer the phone is ringing. Technically, you should tie the grounds together, but the Portfolio has only one, pin five, while the Model 100 has two, pins one and seven. Pin one is the case ground while pin seven is the electrical ground. Because the Ground on the Portfolio is not identified, I would leave them open.*

**COMPATIBILITY:** All MS-DOS computers.

# Breaker, Breaker

*No worries about Smokies when you enter the '90's version of the CB: your modem and* DeskMate.

*by George Sherman*

"Breaker. Break one-nine for a smokey report. Over."

"This is Smokey. What do you have to report?" Long pregnant pause.

"Mercy sakes!"

The above conversation actually occurred in the deep of the night several years ago on I-40 west of Tucumcari, New Mexico. CB radio at the time was the rage and everybody was doing it.

The modern version of the CB has turned into the computer with a modem. But its field for contacts—rather than being limited to the range of the CB transmitter—extends worldwide. You can participate in online conferences in the various forums, which feels strikingly similar to the old CB conversations. You can even find channels that operate in the CB format.

If you aren't now *telecommunicating* by computer, you should try it. It broadens your horizons. I'd estimate that 75 to 80 percent of my computer time is spent in this endeavor, and I've got the long distance phone bills and CompuServe charges to prove it.

Michael Banks, in his book, *Getting the Most Out of DeskMate 3*, recommends beginning on some local bulletin boards (BBS's) if possible to learn the ropes. Then once you feel comfortable with the procedures, branch out to the larger connections, such as CompuServe, DELPHI, GEnie, Prodigy, and—of course—Tandy's PC-LINK. I heartily agree. But just how do you go about it? *DeskMate* has an answer for you. It's called *Telecom*.

## EENIE, MEENIE, MINIE, MODEM

To dial up another computer, a bulletin board, or an information service, you first have to be sure your modem is properly connected and turned on. You need to know the telephone number for the system or computer you intend to call. You should also know the *communication parameters* required by the system.

These parameters include the following: modem speed, the number of data bits, parity, the number of stop bits, and flow control. Sound confusing? It's not as bad as it sounds, because most settings are standard.

The M100 family, for instance, communicates usually at the *speed* of 300 bits per second, or in this case 300 baud. Modems can transmit and receive at 300, 600, 1200, 2400, or 9600 bits per second.

**You can even find channels that operate in the CB format.**

The latter speed is of recent origin, so not all modems available, nor all computer services, accept it. The two speeds 1200 and 2400 are most common.

*Data bits* are the number of bits used to make up a character (a keystroke) and are set at either 7 bits or 8 bits (almost always 8 bits).

*Parity* determines whether each character transmitted is checked for accuracy based on whether the total of the binary values of the bits for each character is even or odd. You can therefore set the parity at even, odd, or none if parity checking is not being used (the most common).

*Stop bits* determine the number of bits placed at the end of a character to indicate that it reached the end of that character. The choices are 1 or 2 with 1 almost universally being used in modern telecommunications.

*Flow control* permits your computer and the remote computer to stop each other if one gets too fast for the other, as would happen, say, when one pauses for a moment to write some data to a floppy disk. So you would turn flow control (Xon/Xoff) on if you wanted that kind of communication.]

Look at the bottom of the masthead in the front of this magazine. You will see the following information:

> The Portable 100 Bulletin Board
> 603-924-9770
> (300/1200/2400—8,None,1)

This it information tells you that to contact this magazine's BBS you need to set your communication parameters at 8 data bits, parity checking off or "None," and stop bits at 1, or *8,None,1*. You may converse with the BBS at 300 bits per second, 1200 bps, or 2400 bps. The number to dial to connect with the BBS is 603-924-9770.

All right, now that you have all this exciting information, what in blue blazes do you do with it? Glad you asked. If you hadn't, I wouldn't have a theme for this article.

## *TELECOM*

When you access *Telecom* you have two screens available. The first of these is the *Command Screen*. The second screen is called the *Terminal Screen*. More on that

later. The Command Screen is where you set up your parameters and also where you list, in sequence, the necessary logon commands required by the bulletin board or computer service.

Let's begin with the parameters.

Start from *DeskMate*. Since, I assume, you have not yet customized your *DeskMate* desktop to include a special list box dedicated to *Telecom*, you access the program by moving the cursor across the desktop with the *TAB* key until the *PROGRAMS* application list box is highlighted. Then select (using your arrow keys) *TELECOM.PDM* and press *ENTER*.

You should be looking at the *Telecom* Command Screen, a large box containing two columns. The left column, the narrower of the two, is headed *Commands*, while the other is headed *Parameters*.

To begin the setup procedure, press *F3* to display the Commands Menu. Select *Set* (with arrow keys) and press *ENTER*.

**All right, now that you have all this exciting information, what in blue blazes do you do with it?**

What you should see is the *Set Communications Parameters* dialog box. As I mentioned, the parameters to access the *P100* BBS are *8,None,1*. You first need to designate to the modem what speed to use. Using your arrow keys, position the cursor on *2400*, or if your modem doesn't reach 2400 bps, set the speed to the fastest speed your modem can reach; then press the space bar. Now press *TAB* to advance the cursor to the *Word Length* options. Using the arrow keys again, move the cursor to *8 bits*, and press the space bar. Using *TAB* again, advance to *Parity Setup* and with the arrows move the cursor to *None* and press the space bar. Press *TAB*

to advance the cursor to the *Stop Bits* options, choose *1*, and press the space bar. *Xon/Xoff* should be set to *On*.

Using similar methods, set the *ASCII filter* to off (no X in the box), *Self echo* to off, and *Add line feed* to off. If all the settings are set correctly, press *ENTER* to accept them. Now return to the Command Screen, where in the left column you should see the word *Set*. In the right column should be the notation *2400, 8, N, 1, ON*.

At this point you should save what you have done so far by pressing *F2*, select *Save As*, press *ENTER*, give the file a name (no suffix—name only), and press *ENTER* again. *Telecom* saves your file automatically with a *.LOG* suffix.

Now you should type in the phone number to call. With the *Telecom* Command Screen still visible, press *F3* again for a command. This time select *Call* and press *ENTER*. *Telecom* displays the *Define phone number* dialog box. Continuing with the idea of contacting the *P100* BBS, type its number, *603-924-9770*. Press *ENTER*.

**You can now create a script that lists the commands that would log you on to CompuServe.**

Voila! The Command Screen now contains both the setup parameters *8,N,1* and the phone number *603-924-9770*. Save this sequence to the previous file by pressing *F2*, selecting *Save* and pressing *ENTER*.

At this point, if you want to dial the BBS, you would press *Ctrl-E* to execute the commands and *Telecom* would transfer you to the Terminal screen. This is where the procedure appears as you watch your number dialed and the other computer answer.

Once you are connected, when you type responses, you are controlling—and this important—the *other* computer, not yours. Your computer is now acting like a terminal for the other machine. The one exception is when you press *Alt-C*. This returns you to the Command Screen to execute commands (even while you are on line with the other computer). When you're ready to return to the Terminal Screen again, choose *Terminal* on the Commands Menu, or use the quick-key combination, *Ctrl-T*.

Many online services and BBS's require some sort of online confirmation to be sure you are really you. For example, at the end of this article is listed my CompuServe ID number, which is 72300,3203. When I log on CompuServe, I am asked for my ID number and a secret password combination known only to me and the CompuServe mainframe, which encodes my password so that even the CompuServe workers can't decipher it. I routinely change my password every ninety days to protect my access to the service and keep someone else from running up charges on my account.

Further, you can record the procedure to log on a BBS or online service and save the procedure in a file, known as a *script*. So once you've saved the script, you won't have to retype the procedure every time you log on.

### LOGGING ON COMPUSERVE WITH A SCRIPT

I'll show you how I set up my machine to log myself on CompuServe (however, I'm omitting my password, so you won't be able to).

Since *8,N,1* are the CompuServe communication parameters, you'll leave the Set Command as is. To remove the previous phone number (remember you have already saved it to a file with that number in it), in the *Telecom* Command Screen highlight *Call* with the arrow keys and either choose *Delete* from the Commands Menu (*F3*) or press *DEL*.

You can now create a script that lists the commands that would log me on to CompuServe. The Command Screen should look like this:

```
Set 2400, 8, N, 1, OFF
Call 1-316-689-8132
Wait 10 seconds
Send "^C"
Wait for   ":", 30 seconds
Send "72300,3203^M"
Wait for   ":", 30 seconds
Send ("[my password]^M")
```

To create my CompuServe logon script, use the commands shown in the Commands Menu (*F3*). These commands then should appear on the *Telecom* Command Screen. For example, you should recreate a new telephone number

to dial CompuServe, so you should go to the Commands Menu, select *Call,* and fill in the dialog box with CompuServe's number (above). To add a Wait command to the script, select *Wait* from the Commands Menu and change the dialog box. And so on.

The caret symbol (^) in a command means CTRL or control. In the above script on line 4, the ^C is the script designation for *CTRL-C,* which *Telecom* interprets as if you had actually held down the *CTRL* key and pressed *C*. Lines 5 and 7 tell the script to wait up to thirty seconds until the prompt (a colon, :) shows up and then to continue to the next command. Lines 6 and 8 send my ID number and my password. The *CTRL-M,* or ^*M* at the end of those lines is the same as pressing the *ENTER* key. In other words, the script loads the line into the keyboard buffer and then presses the *ENTER* key to send it.

Of course when you write your own script, you would put the phone number of your own local service in the *Call* line, your own ID number in the second *Send* line, and your own password in the last *Send* line. Choose *Save As* from the File Menu and save this setup under a file name, perhaps using the name of the local BBS or service.

After you have set up a script and saved it to a file, you can *autolog* the procedure by setting up a special list box for *Telecom* in the *DeskMate* desktop and telling it to show all files ending with the suffix *.LOG*. Then, to start the procedure, move your cursor to the *Telecom* list box, select the file that represents the communications script you want, and press *ENTER*. *Telecom* automatically logs on for you and leaves you in the Terminal mode.

**_Telecom_ automatically logs on for you and leaves you in the Terminal mode.**

To end your connection, most online services require you to type either *Bye* or *Off*. This severs your connection with them and prevents excess connection charges. Then to get out of Terminal mode, press *ALT-C* to enter the Command Screen, *F3* to list the commands, choose *Exit,* and press *ENTER*.

Whether you make connection with a local BBS or a national or worldwide computer network, you'll find many other kindred souls who are more than willing to offer you help to explore the wide, wonderful, exciting world of telecommunications.

"This is KBRS-0238, ya ol' Yankee Clipper here, goin' clear, good buddy." Bye.

*BY GEORGE!*

*You can contact George on CompuServe (ID 72300,3203) or by mail, either c/o* Portable 100 *or directly at 1701 Clarke Street, Ponca City, OK 74601. (Please enclose SASE if requesting a reply.)*

Unless otherwise stated, all quotations contained in this and future articles are from the following books:

*Getting the Most Out of* DeskMate 3. Michael A. Banks. A Brady book. Simon & Schuster, Inc., 15 Columbus Circle, New York, NY 10023.

*The First Book of* DeskMate. Jack Nimersheim. Howard W. Sams & Company, Macmillan Computer Book Publishing Division.

**COMPATIBILITY:** All MS-DOS computers.

# Thanks for the (DOS) Memory

*Let's search the computer's memory for the history of the silicon brain.*

*by Stan Wong*

**Bubble memory** (bub'·el mem'·ree) *n.* A derogatory term, usually referring to a person's intelligence. See also *vacuum tube.*

BULLWINKLE: "You just leave that to my pal. He's the brains of the outfit."
GENERAL: "What does that make YOU?"
BULLWINKLE: "What else? An executive."
—*Jay Ward*

An elephant never forgets. Or so the saying goes, but an elephant never had so much information to remember as a PC user when trying to distinguish between the different types of memory in his or her PC.

Do phrases such as *extended memory* and *expanded memory* make your head spin? Do you break out into a sweat when your friends discuss the merits of *shadow RAM* versus *cache memory*?

We Model 100 users have it pretty easy. Most users have only to worry about how to fill the 29K of free memory (in a 32K machine) with text and programs. *BASIC* programmers become familiar with the system area in read-only memory (ROM). Machine language programmers are familiar with the memory area above *MAXRAM* and how to manipulate it.

The point is that the Model 100 uses a single, linear address space but allocates portions of it for different uses. But most users care about only the 29K free memory in which they manage their data and application programs.

PC users today don't have this luxury. The proliferation of different memory types came about because of the constraints imposed by the original PC architecture. That and the never-ending quest to obtain the maximum performance from our machines.

In this article I'm going to make a distinction between different *types* of memory and different *uses* of memory. Expanded and extended memory are different types of memory. Shadow RAM and disk caches are different uses of the same type of memory. I'm going to concentrate on the different types of memory in this article, though I will mention different memory uses also (I've got a word quota to meet).

**That's ten times more memory than was available at the time.**

## A BIT BY ANY OTHER NAME

In the beginning there was the IBM PC. It surpassed the 8-bit 8080/Z80 CP/M machines of the day by offering the 16-bit Intel 8088 processor which could—gasp—address 1 megabyte (MB) of memory! CP/M machines could address only 64K.

This memory area is known today as *conventional memory*. The IBM engineers at the time divided this 1 MB address space into a 640K base memory area and a 384K reserved area. Back in 1982 few people could conceive of programs larger than 640K. That's ten times more memory than people had available to them at the time.

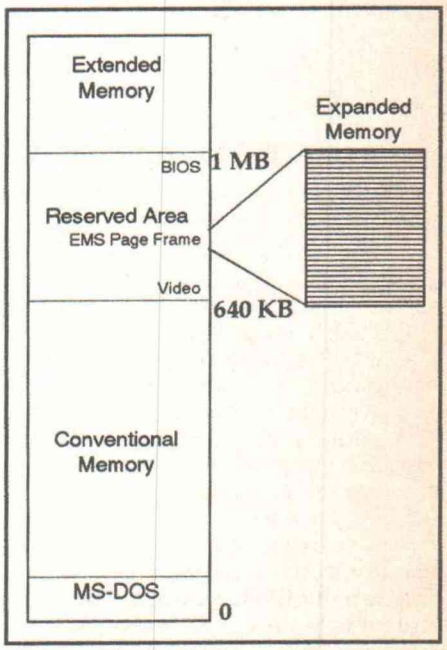



*Figure 1. The MS-DOS computers use a unique memory scheme.*

The *base memory* area is where programs run. The DOS operating system is loaded in lowest memory. Your application program runs in the area between DOS and the 640K upper limit.

The *reserved area* is the memory space located above 640K up to 1 MB. This area of memory space is reserved for system functions. The *Basic Input/Output System* (BIOS) is located in this area as well as the address space for the video adapters. Much of the area, as originally defined, was not used.

### EXPANDED MEMORY

The 1 MB addressing limit of the PC's 8088 processor means that there is no easy way to add more memory.

A solution was developed by Lotus, Intel, and Microsoft (LIM) known as the *Expanded Memory Specification* (EMS).

No one wanted to give up any of the base 640K memory, so a small block of memory in the reserved area was defined to be the EMS access area. This EMS *page frame* is a 64K area in the reserved memory that can hold a *page* of EMS memory. You can think of EMS memory sitting off to the side of conventional memory and the EMS page frame being a "view port" onto 64K segments of EMS memory. Science fiction fans can think of it as an alternate parallel universe with the page frame as dimensional warp.

Figure 1 illustrates the concept.

EMS memory cannot be used by DOS for running programs. It can be used, however, by application programs. Storing program data in EMS rather than conventional memory is one such application. EMS memory is also frequently used for system applications such as RAM disks and disk caches.

### EXTENDED MEMORY

The notion of extended memory was introduced with the IBM PC/AT and the Intel 80286 processor. The 286 processor introduced the ability of the PC to access memory beyond the 1 MB limit of the original PC's 8088 processor.

The notion of the new memory being "extended" is relative to the PC's 8088 architecture. The 80286 processor had a new mode that viewed this area as just a linear extension of conventional memory. Because there were so many 8088-based PC's, application programmers chose not to take advantage of the new memory addressing mode. In the 8088 context, the reserved area sat between the base memory and new extended memory area rendering the new area useless for program code. To this day many DOS applications are being coded for the lowest common denominator, the 8088. Thus one program could run on all machines.

**Many DOS applications are being coded for the lowest common denominator, the 8088.**

Until recently, extended memory wasn't used for anything other than RAM disks and print spoolers. Today, programs are incorporating more and more functions, which as you would expect, requires more and more memory.

With increasing popularity of *Windows 3.0*, extended memory has more application. *Windows* prefers to use extended memory over expanded memory.

### ME AND MY SHADOW

*ROM* (read-only memory) is a type of memory where system functions, such as the BIOS, are kept. When you turn your computer off, it loses the contents of memory, except for ROM. That's because ROM doesn't need power to maintain its contents. You also can't change it

either. It's permanently engraved in silicon.

*Shadow RAM* is a different use of conventional memory. Shadow RAM is either base memory or extended memory that has been mapped into the reserved area. The memory that comprises the BIOS—usually slow ROM or the equally slow *erasable programmable read-only memory* (EPROM)—is copied into the shadow RAM area on bootup. The system pointers to BIOS are adjusted to point to the shadow RAM area rather than the real BIOS addresses. Since shadow RAM is made up of faster base memory, the BIOS instructions can be executed much faster. System speed appears to be increased without changing the CPU speed.

### OTHER MEMORY

*Cache memory* is memory that is not directly usable by your application programs. It sits between your microprocessor and system memory. It's made up of a small amount of very fast memory. Its purpose is to store the most frequently accessed memory locations and serve them to the microprocessor quickly. This allows system memory to be made up of slower and cheaper memory.

**A good cache memory can make a system appear to run much faster while keeping costs reasonable.**

A properly designed cache memory can make a system appear to run much faster than is possible using conventional memory while keeping costs reasonable. As systems need more and more memory, cache memory becomes more important. Otherwise, the cost of matching memory speed to increasingly faster microprocessors would make the national debt look like pocket change.

*Interleaved memory* is not a special type of memory. It's how it's arranged in the system. Normal memory is serial (linear) in nature. That is, in a memory chip, you access the first bit, then the next, and so on. It takes a certain time to access a bit and then the next one. In addition, between accesses it takes a certain time for the memory to recover, or rest.

Interleaving is a technique where odd bits are in one memory chip and even bits are in another. This 2-way interleave allows the odd bit to be accessed, then the next bit in the even bank to be accessed while the odd bank is "resting."

This overlap speeds up the apparent access speed of the memory system. System designers can use a higher interleave factor for even higher speeds. Greater hardware cost is the drawback to this memory arrangement.

*MS-DOS 5.0* and *Windows 3.0* has introduced the terms UMB and HMA to our memory lexicon. The *Upper Memory Blocks* (UMB) and *High Memory Area* (HMA) are nothing more than different uses of the reserved area and extended memory, respectively. The two new operating environments still maintain the link with the 8088 architecture, however. UMB and HMA are devices to give us more of that precious 640K of conventional memory for our bloating programs.

### OUT OF MEMORY

My word processor word-count function shows me that I'm out of memory, which means that I've met my word quota for the month.

Computers shouldn't be hard to understand, but we are living with the constraints of the past. That's the price that we have to pay for backwards compatibility. More and more high-powered applications are demanding at least an 80286 processor to run. If we want to take advantage of the functionality of the new apps we're going to have to break our links to the PC past and move forward into the future. Until then, I'm keeping my pet elephant to help me remember, uh, remember, oh, yes, something to do with memory. All I remember is that amnesia used to be my favorite word, but then I forgot it.

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Secondly, LUCID© is fast. LUCID© is so rapid, a 36 column corporate financial statement took less than 4 seconds to calculate.

Thirdly, LUCID© has features you won't find in most other spreadsheets. For example, when you type a label (text) it will cross column boundaries; in other words when you type a label or title it will appear as you type it irrespective of column or width. LUCID© also allows you to set column widths individually, and of course LUCID© has insert row and insert columns, as well as other standard features. LUCID© even lets your formulas refer to cells in other spreadsheet files.

Further, LUCID© has what no other spreadsheet has: Cut, Copy, and Paste. It uses the same keys as Cut and Paste in TEXT, but here's the difference: it takes all the formulas with it when you paste and they all automatically recalculate with the entire sheet.

And here is what is really amazing. You can copy or cut from one spreadsheet and paste into another spreadsheet or even a TEXT file.

LUCID©supports all BASIC math functions as well as Log, sine, cosine, tangent, exponentiation and other sophisticated math functions.

LUCID© has so many features that you will say "this is what I need in a spreadsheet", such as automatic prompting of an incorrectly typed-in formula showing just where the mistake was made.

LUCID© has expanded "go to" functions that remember and produce a windowing capability.

But perhaps most remarkable is that LUCID© is not only a spreadsheet but a program generator as well. First, LUCID© lets you protect all cells against entry or change, and then unprotect just the cells you want for someone else to use as input fields.

LUCID© will not only process values, but text input as well so that the facts other than numbers can be responded to. LUCID© has the ability for you to refer in a formula to cells containing words. This feature combines with the capacity of doing "if then" statements that work by doing table lookups against even massive X/Y charts of text or numerical information. You can produce a program that responds to inputs with no programming knowledge whatsoever.

You can prepare a report section in your spreadsheet with instructions to your user for printout, and they can produce a personalized printout that responds to their input. All your formulas and tables that did the calculations and provided the facts are invisible to that user. LUCID© is useful for doctors for patient questionnaires, trouble-shooting technicians, purchase clerks, people doing job quotes, stores for customer workups, insurance agents and anybody who needs to process specific facts and numbers to produce a report based on those responses.

LUCID© comes with a manual that explains not only the characteristics of LUCID©, but will train you how to use a spreadsheet even if you have never seen one before. You are shown how to do budgets, forecasts, breakeven analysis amortizations and many other types of personal and business reports and calculations.

User friendly is such an over-used term in this industry, but a typical comment has been "I have never seen a spreadsheet that does so much, and yet LUCID© is so much easier and faster to use."

LUCID© is a result of a most exhaustive developmental effort in which PCSG's objective was to develop a spreadsheet that was better than the state-of-the-art. We are so pleased because LUCID© provides for the Model 100 spreadsheet capability you cannot equal on a desktop computer.

LUCID© is, in our opinion and that of those who have examined it, a breakthrough. We sell it on a 30 day trial. If you are not completely satisfied, return it within 30 days for a full refund. Priced at $99.95 on snap-in ROM. Please add $5.00 for shipping and handling. Mastercard, Visa, American Express or C.O.D.



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COMPATIBILITY: WP-2.

# Big Iron Connectivity: Direct-Connect File Transfers

*Try this high-tech version of tin cans on a string.*

*by Stan Wong*

The WP-2 as remote keyboard. A lot of people tend to use their WP-2 as data collection devices away from their desktop computer. I, for instance, use my WP-2 to write drafts of these columns wherever and whenever I'm moved to put fingers to keyboard and produce this wonderful verbiage. At a later time, I transfer my precious prose to my desktop machine for finishing. In essence, the WP-2 becomes a remote keyboard for my desktop DOS machine.

This month I'll explore direct-connect file transfers between PC's and the WP-2. Although the information that I'll present is aimed at PC users, the same general information is applicable to Macintosh, Amiga, and other computers that have a serial port. And if you have reason, you can transfer data to a Model 100, too!

Although you have other ways to get your data to your desktop machine, I'll discuss only *how* to transfer your data. Further, *what* to do with it after the transfer will be the topic of another column.

The WP-2 comes equipped with a standard IBM-compatible serial port. All it takes is the proper cable and the proper setup. Soon, you'll be zinging your prose around at 9600 baud. Awesome thought, isn't it?

## I'VE BEEN SET UP!

Successful data transfers start with the proper hardware and software setup. You'll need to experiment a bit to see what works for you. Once you get it working, bottle it and forget it!

Let's start with the hardware. What you'll need is one WP-2 and one PC. Too obvious? Okay, let's add a *null-modem cable* to the mix.

What's a null-modem cable? If you don't know, your best option is to go to your computer dealer and ask for one, or ask your computer-nerd neighbor. As its name implies, a null-modem cable is a means of transferring data without a modem. It's constructed differently than a standard cable since some of the wires are crossed.

Be careful, though; not all null-modem cables are constructed the same. I am aware of at least a dozen different wiring configurations that can be classified as "null-modem." See figure 1 for the wiring diagram that I know that works. It's also one of the most common configurations.

I don't use a null-modem cable. I use a normal modem cable (where the wires go straight from pin to pin) with a *null-modem adapter*. The effect is the same. The 26-1496 part from Radio Shack works well. To mate to the 9-pin WP-2 serial connector, I have to add a 25-pin/9-pin adapter as well. This assumes that your PC, like my Tandy 1500HD, has a 25-pin serial port. If it has the 9-pin type, then you'll have to add another 25-pin/9-pin adapter. Null-modem adapters and cables exist for systems with 9-pin adapters on both ends, though I seldom see them. You might check with your local computer or electronics store.

**Be careful; not all null-modem cables are the same.**

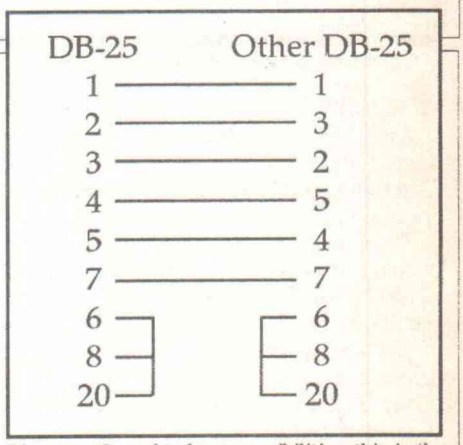


*Figure 1. Out of a dozen possibilities, this is the safest wiring you can use to make a null-modem cable that works for data transfers using the Tandy WP-2 to a PC.*

## IT TAKES TWO

I'll be using the terms *upload* and *download* liberally. What an upload or download is depends on your point of view. In this context, take the self-centered view of a computer. Data that is being sent out of it is being *uploaded*. Data being received is being *downloaded*.

Because it takes two to make a data transfer, one machine must be uploading while the other must be downloading. Remember this and it'll make selecting the upload/download functions of communication programs easier.

By default, when I talk about transferring a file, I'm adopting the computer equivalent of the Ptolemaic point of view and assuming that the WP-2 is the center of the universe. Therefore, uploading a file refers to sending it to a PC.

In what follows I'm going to describe the process of uploading a file from the WP-2 to the PC. I rarely need to download data from the PC to the WP-2, and I suspect that most of you won't either. Anyway, the download process is nearly the reverse process of uploading.

PC SETUP

My standard advice for computer-related problems is this: When in doubt, read the manual. But not in this case. The manual is all but useless on this subject.

The WP-2 manual goes through a tortuous procedure on the PC end using nothing but DOS commands. This is great if you don't have a DOS equivalent of *Telcom*, but these days, who doesn't have something like *DeskMate* or *Procomm*? At least shareware programs like *Procomm* let you try before you buy, so cost is not an issue for experimentation.

I'm going to assume that you know how to use a communications program for your PC. Just make sure that you match the settings you make in the WP-2 *Telcom* setup. Be sure to select the *download* function to set up a transfer into the PC.

WP-2 SETUP

If you've endured my last two columns, you're a veteran of the intricacies of the *Telcom* Setup menu. Setting up the WP-2 for direct-wire file transfers seem easy by comparison. Remember, *F2*--takes you to the Setup menu. Here are the parameters that I recommend:

| | |
|---|---|
| Device | RS-232C |
| Baud rate: | 1200 |
| Word length: | 8 |
| Parity: | None |
| Stop bits: | 1 |
| XON/XOFF: | Disable |
| Printer echo: | Off |
| Duplex: | Full |
| Transfer: | CRC-XMODEM |
| Incoming CR: | CR |
| Outgoing CR: | CR |

The state of the other parameters doesn't matter since they apply to modem communications.

Some of the settings that I've recommended may be controversial, but to appeal to the widest audience possible, I'm suggesting you try these first before you start experimenting. I'll explain why later.

GET READY, GET SET ...

At this point you should have the WP-2 and PC communications parameters set. Make sure the null-modem cable is hooked up.

Start your PC communications program but don't actually start the transfer.

**The settings may be controversial.**

Get to the point in the user dialog where it prompts you for a file name to put the received data. Type in the receiving file name but DO NOT press the *ENTER* key. For most programs like *Procomm*, pressing the *ENTER* key after entering the file name starts the transfer process.

Do the same for the WP-2. *F2-9* puts you into the *Telcom* mode. You should see the following message:

*RS232C is ready*

If not, you haven't set the communications up correctly.

Next, *F1-U* puts the WP-2 into the upload mode (send file to the PC). You'll be asked to select a device to upload from: *DEVICE: MEMORY RAM DISK MEMORY CARD*

The document that you want to upload most frequently is in memory so put the cursor highlight over *MEMORY* (or whatever is appropriate) and press *ENTER*. At the *FILE NAME:* prompt, type the name of the file including the extension but DO NOT press the *ENTER* key.

GO!

Both computers should be waiting for you to press the *ENTER* key to complete the file name prompts. Press the *ENTER* key on the WP-2 to start the transfer process. Quickly do the same on the PC. You should do this within about two seconds to ensure that both ends "sync" up with each other.

In theory, the Xmodem protocol allows the sender and receiver to start at different times. Each end waits a certain time before timing out and giving up. The WP-2 seems to have tight timing specs, at least on my early model WP-2. If I don't start both ends within two to three seconds the WP-2 locks up tightly, necessitating a reset to get it unstuck.

If all goes according to plan, you should see an *Uploading* message followed by a series of dots to indicate that the WP-2 is sending your file.

THUMBS UP

A rule to use when using Xmodem-CRC transfers is to start the sender first. The sender waits and listens for the receiver to start the protocol negotiation process. The receiver indicates that it wants to use the Xmodem-CRC protocol by sending the character *C* to start the protocol. If the sender doesn't respond in a timely way, then the receiver drops back into the original Xmodem mode.

If the WP-2 is the sender, which means that you are transferring a file to the PC, *and* you don't start each machine within several seconds, the PC assumes that the WP-2 can't support the CRC

mode and drops back to the original Xmodem protocol. The WP-2 supports only Xmodem-CRC. Thus, both machines get into a "deadly embrace," which makes it time for the "big red button."

### FINISH LINE

It's time to explain my selection of communications parameters. First the baud rate setting. There is a bug in early WP-2's that affects the *Telcom* module. Typical symptoms include the inability to transfer files reliably at certain baud rates. Dropped characters are the usual result. Dropped characters during Xmodem transfers may cause either or both the WP-2 and PC to lock up.

The speed of 1200 baud is usually a safe setting for most users that I've heard from. WP-2 files tend not to get too big (remember, there's only 22K of memory for your document) so that transfers only take a few seconds longer than at 9600 baud.

If 1200 baud transfers are successful, then try successively higher speeds until you find the maximum reliable transfer speed your WP-2 can support.

How do you know if your machine has the *Telcom* bug? Easy. Just flip your machine over and look at the model number (e.g., Cat. No. 26-3930). If there is an "A" suffix, you have the fixed version. If not, you do have recourse. Only you'll have to wait until next month to find out all the details.

## How do you know if your machine has the *Telcom* bug?

### DOWNLOADING

Sending a file from your PC to the WP-2 is almost the same as the procedure for sending it the other way. You'll have to select the *upload* function on the PC, and press *F1-D* to select the *download* function on the WP-2. Then reverse the order of which machine to start first. And that's it!

Beware that your WP-2 may not be able to support as high a data transfer rate as for uploading. For example, my WP-2 can upload at 9600 baud but can only download at 1200 baud. Some pre-"A" users report being able to transfer at 9600 baud in both directions. Your results will be a function of your PC speed, serial port capability, and telecommunications software.

### WINDING DOWN

This month you learned how to transfer your documents to and from the WP-2 through a direct-wire connection. Next month you'll take a look at one user's adventures with the "A" ROM fix. After that I'll discuss what to do with your documents once you get them to a PC. The WP-2 has some quirks with its file formatting.

*This is your column. I want you to help define the "yellow brick road" for me to follow. Fire up your WP-2 and send me a letter in care of* Portable 100 *or directly at P.O. Box 28181, Santa Ana, CA 92799-8181. If you prefer the electronic medium, use GEnie address STAN.WONG, CompuServe address 70346,1267, or Internet address dasun!wongs@Sunkist.West.Sun.Com.*

# The Portable 100 Classifieds

## Software

**FAST (tm) 3x turbo cassette** LOAD/SAVE utility for Tandy M100/102, M200 (specify). See 11/89 P100 review. SASE for information. Cassette, manual $19.95 ppd. Zwillenberg, 475 Richmond, Maplewood, NJ 07040.

**TRANSFER.COM** MS-DOS/Tandy Laptop $9.95 plus $1.00 shipping and handling (Min $18 for MC or Visa orders; Calif. residents add 7% tax)

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## Hardware

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**Data Acquisition with M100/102.** REI, RR1 Box 113F, Royalton, VT 05068. (802)763-8367. 10/91

**Tandy 102 w/32K**, adapter, & null modem. Rarely used. $225.00 (409) 935-5637 5/91

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**T100-32K with Video/Disk Interface,** acoustic coupler, recorder, software. Package only $595. EC. Dominic, 215-339-5848 6/91

## Wanted

**Hobby contact wanted** with Tandy notebook users in Paris and suburbs. Possible program exchange. Speak English, French, and Model 100 assembly language. Call 45-03-12-16 Paris phone, or write Mike Kelton, 39 Avenue Paul Doumer, 75116 Paris, France. 4/91

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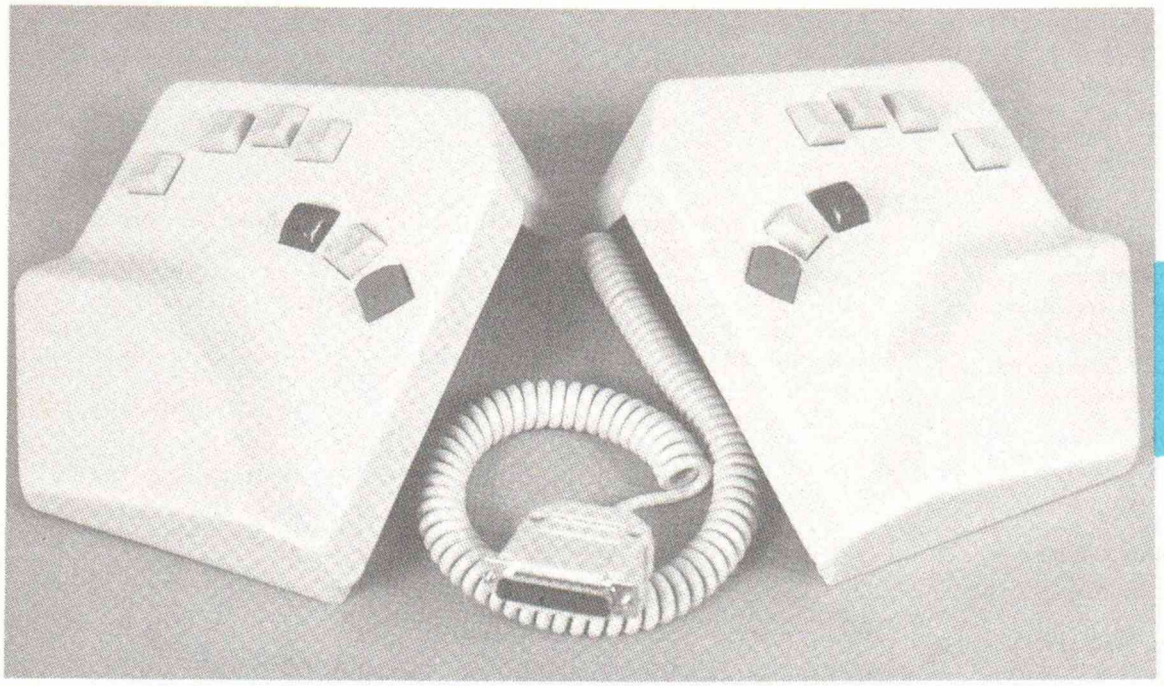
*The* **BAT** *lets you create a library of words, phrases, and macros that you enter with a single chordic keystroke.*



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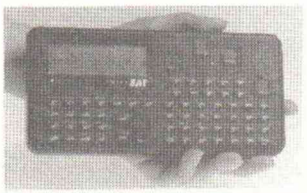

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**The Mini BAT**
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*"Incredibly easy to learn. I was typing, quickly and accurately, in less than an hour!"*
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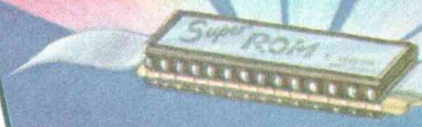


**Boots the Tandy Portable Drive with one button!**

**Now Available for the Model 200!**

# NOW YOU CAN REALLY HAVE IT ALL!

**All on one ROM. Truly the finest four programs available for the Model 100 — guaranteed. Try it for 30 days. If you aren't blown away by the excellence return it for a full refund.**

**$199.95**

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The four best programs for the Model 100 all on one ROM. 32K of power without using any RAM for program storage. This is the PCSG Snap-In ROM that just presses easily into the little ROM socket in the compartment on the back. You access the four right from the main menu like built-ins.

Write ROM — the definitive word processor for the Model 100. Function key formatting or dot commands. Search and replace. Library feature — inserts words, phrases or whole documents into text from just a code. MAP lets you see a picture of your document. In all there are 60 features and functions. No one can claim faster operation. FORM lets you create interactive forms with on-screen prompts that you can answer from the keyboard. Nothing else for the Model 100 compares with the features of Write ROM. Exactly the same as the Write ROM sold as a single program. Infoworld says it "makes the Model 100 a viable writing unit ... surpassed our highest expectations for quality and clarity."

Lucid Spreadsheet: This is the one PICO magazine says "blows Multiplan right out of the socket" and Infoworld performance rated as "excellent" and said "makes the Model 100 compute." Gives you features you cannot get with Lotus 123. Lets you build spreadsheets in your Model 100 that would consume 140-150K on a desktop. Program generating capability with no programming knowledge required. Variable column widths. Includes find and sort with function key control. It's fast, recalculates like lightning. No feature has been taken from the original, only new ones added.

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Outliner: Does everything that Thinktank does on a PC but a whole lot better. Includes a Sort for your headlines. Lets you have headlines of up to 240 characters. Has cloning, hoisting and sideways scroll up to 250 characters. Like Lucid, this one sets a new standard for outliners. This is the way to plan and organize your projects.

Present Lucid and Write ROM owners can upgrade for $150. If you have both it's $125.

As usual PCSG sells the Super ROM on a thirty day guarantee. If for any reason you are not satisfied, simply return it for a full refund.

We are excited about this product. Super ROM gives the Model 100 the true power of a desktop. No other multi-program ROM has software that compares. But don't take our word for it. We invite you to make that comparison yourself. Priced at $199.95 on Snap-In ROM.

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